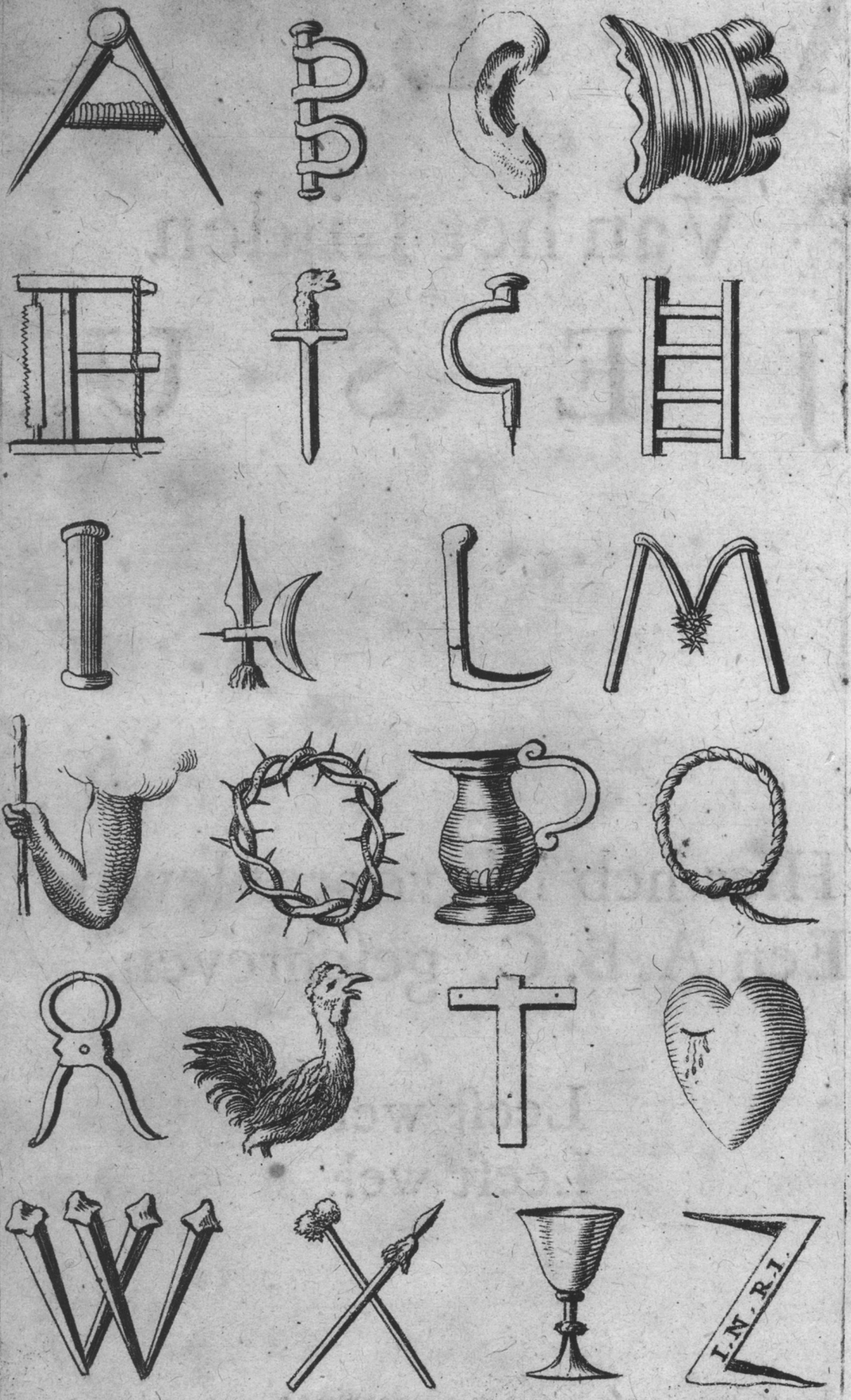

I.N.R.I.

From hieroglyphs to universal characters
Pictography in the early modern Netherlands*

Thijs Weststeijn

In his 1663 book *Het gheestelyck jubilee* (The spiritual celebration), the Antwerp Jesuit Joannes van Sambeeck (1601-1666) included an image of the letters of the alphabet constructed from the instruments of Christ's Passion (fig. 1).[1] This witty conceit had a serious undertone that combined artistic and scientific interests: it illustrated the seventeenth-century concern with how to adjust words to things, or *verba* to *res*. It implicitly harked back to a century of Jesuit scholarship concerned with pictography, or writing by means of images rather than alphabetic script. The Jesuits not only thought that meditation on the Passion benefited more from images than texts, but they also had great expectations for pictography related to history, geography, and science. Besides aiding their global proselytisation and mnemotechnical training, it would lay bare the Christian wisdom expressed in the most ancient history – via the Egyptian hieroglyphs – and the geographically most remote civilisations – via the Chinese and American scripts – and provide a universal language reflecting the order of nature itself.

Echoes of this debate reverberated throughout the Netherlands, which is not surprising in the light of the ubiquity of the figurative arts as well as the rise of linguistic scholarship at Dutch universities. Thus, Rembrandt's pupil Samuel van Hoogstraten (1627-1678) stated that a central commonplace in art theory – namely that painting is 'mute poetry' – was wrong, since Pictura 'speaks abundantly, in a hieroglyphic manner'. In his 1678 treatise on painting, he explained that the Chinese, Egyptians, and Mexicans had 'written their books with meaningful pictures, instead of letters; and their way of expressing themselves has reached us now in the art of painting'.[2] The issue also interested scientists. When Christiaan Huygens discussed the possibility of communicating with intelligent life on other planets in his *Cosmotheoros* (The Hague 1698), he mentioned 'painted scenes in use among the barbarous people of Mexico and Peru'.[3]

This article examines the Netherlandish chapter of the Renaissance fascination with pictograms, or *beeldletteren*, as a key aspect of the scientific enterprise to decode, represent, and master the Book of Nature.[4] What did Van Hoogstraten mean when he wrote that painting speaks 'hieroglyphically'? Clearly, he should not be interpreted according to the twentieth-century trend of highlighting the 'textual' nature of artistic utterances, but rather an opposite approach: the idea that communication

1
Image alphabet
engraving, Joannes van Sambeeck, *Het gheestelyck jubilee* (Antwerp 1663, p. 248) (photo: Universiteitsbibliotheek Amsterdam, Special Collections).

through images is more fundamental than that through alphabetic signs. When Renaissance writers on the visual arts used the formula *ut pictura poesis*, they elaborated upon Aristotle's assumption that 'the soul never thinks without images'.[5] Pictography was just one expression of a more general desire to sidestep the contingency of alphabetic signs and arrive at pure communication of knowledge. Although Plato had rejected the idea of a natural language 'in which the shapes and sounds of letters indicated the essential nature of things', Dutch scholars forgot his conclusions and envisaged an ideal language that directly mirrored reality.[6] To quote Descartes, they aimed at the identification of 'simple ideas that (...) form the basis of all the things that man can think (...) [these] would help the judgement to represent things so distinctly that it would be impossible to be mistaken about them, whereas the words that we actually use have mostly confused meanings'.[7] Thus, just like Dutch painters saw their art as a 'mirror of nature',[8] so Descartes envisioned a specular doctrine of knowledge and language denoting individual things 'similar to a picture or mirror that represents with absolute precision the image of the universe and its parts'.[9]

As we shall see, ideas of pictography touched on a wide range of speculations about the essence and origin of language, remote civilisations, memory, logic, and finally the study of the natural world and how it could be 'read' by scientists. Combining different strands of scholarship with the skills of painters and engravers, pictography was a consummate effort to arrive at encyclopaedic knowledge joining art, language, history, geography, and philosophy, which, like many of the century's other encyclopaedic projects, did not fulfil its scientific promises but had striking spin-offs especially from an artistic point of view. Studying this phenomenon by zooming in on the Netherlands is somewhat problematic, as it had a broad European scope linking scholars and artists in the Low Countries to their counterparts in Rome, the German states, and England. Nevertheless, the Netherlands were fertile ground not only for a sophisticated visual culture but also for innovative linguistics and alternative interpretations of divine revelation, which were interwoven with the revolution of knowledge that pictography promised.

Without aspiring to be comprehensive or incontrovertible, I will focus on four interrelated aspects. The first is the *hieroglyphic* argument. Archaeological remains and documents suggested that pictograms were revelatory of lost, ancient, or geographically remote 'hidden knowledge'. Second, when joined to ideas about non-European languages, this historical research inspired a *linguistic* argument. Ideas about a primitive vocabulary from which the modern languages were spurious offshoots were widely popular in the Netherlands; in a related context, the notion of Real Characters – signs that stand in direct relation to the things they represent – explored the art-theoretical commonplace that drawing and writing were fundamentally identical activities. The third argument is the *encyclopaedic* one. Ideas about the 'alphabet of nature', or the visible world as a text in which God addresses humankind, inspired the organisation of encyclopaedic collections according to a similar alphabetic structure. The fourth argument, finally, is *logical*. Crucial here is the importance of

images in the tradition of mnemonic logic, as well as the idea that the creative process resides in the combination of primitive concepts.

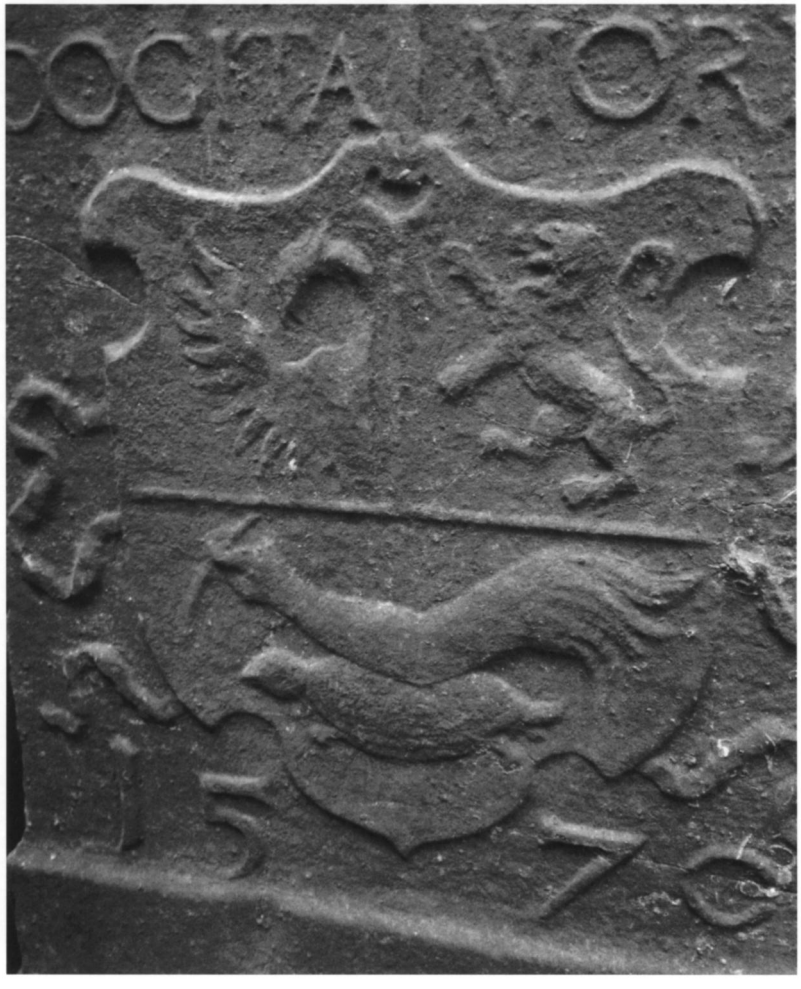
The hieroglyphic point of view

Our discussion begins with the reception of Egyptian hieroglyphs. Various artists in the Netherlands designed emblematic pictograms; the Antwerp patrician Jan van der Noot (c. 1539-1595) stands out for combining them in a script for 'riddle obelisks' (fig. 2).[10] To welcome Charles V in 1540, Utrecht's Town Hall displayed a frieze with

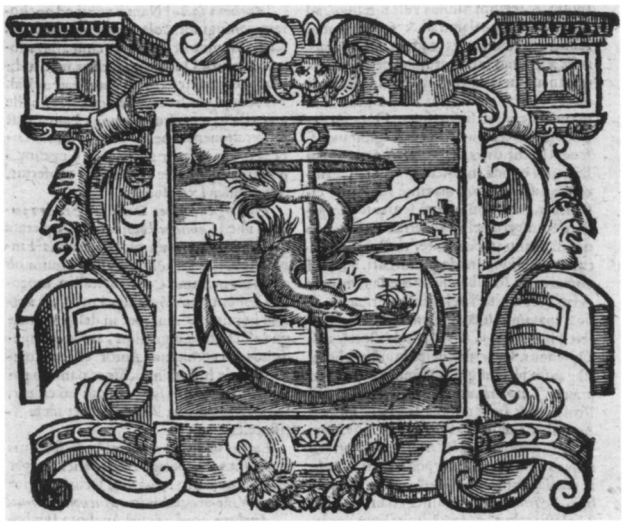
2
Monogrammist HE, *Obelisk with hieroglyphs*
woodcut, 225 x 145 mm, Jan van der Noot, *Een cort begryp der XII. Boecken Olympiados,* (Antwerp 1579)
(photo: Universiteitsbibliotheek Amsterdam, Special Collections).

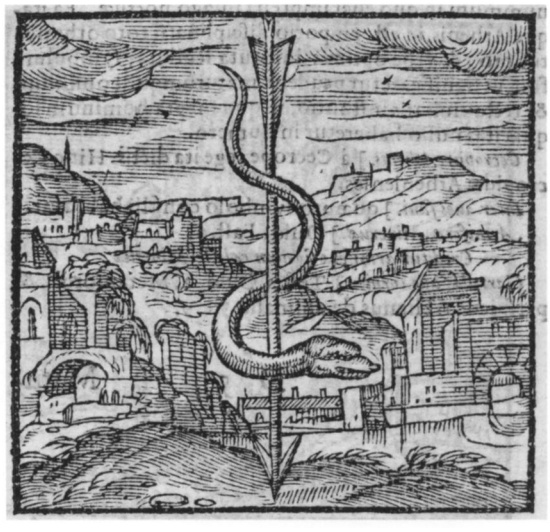
'hieragliphie' [*sic*], or 'Egyptische letteren veel significatyf', which the painter Lieven van der Schelden (active 1550s-1590s) imitated for Alessandro Farnese's entry in Ghent in 1584.[11] Of a more lasting nature were the inscriptions on Hubert Mielemans's (d.1558) grave in Liège and the obelisk that Maarten van Heemskerck (1498-1574) erected for his father, representing the latter's motto pictographically (a painter's hand above a turtle) (fig. 3).[12]

Implicitly, these artists harked back to Leon Battista Alberti's (1404-1472) treatise on architecture that advised avoiding letters on monuments made for posterity and replacing them with 'Egyptian' pictograms that could always and under all circumstances be read by scholars.[13] Alberti thus turned to the inscriptions on obelisks in Rome that he thought could be deciphered even without knowing the language spoken in Egypt.[14] Artists in the Netherlands had as little specific knowledge about hieroglyphs as Alberti; Van der Schelden and Van Heemskerck's creations were largely products of the imagination.[15] Moreover, the few extant historical sources were unreliable. A book containing spurious



3
Maarten van Heemskerck, Memorial to Jacob Willemsz. van Veen, 1535 (detail)
224 cm x 61 cm (bottom), 24 cm (top). Formerly in the cemetery of the Dutch Reformed Church,Heemskerk; presently kept inside the church
(photo: Maartje de Boer).





4
Princeps
engraving, Andrea Alciati, *Emblemata (...) cum (...) notis Laurentii Pignorii Patavini* (Padua 1661, p. 615)
(photo: Universiteitsbibliotheek Amsterdam, Special Collections).

5
Maturandum
engraving, Andrea Alciati, *Emblemata,* (Leiden 1584, p. 58)
(photo: Universiteitsbibliotheek Amsterdam, Special Collections)

hieroglyphic 'explanations' attributed to Horapollo, a priest of late antiquity, resurfaced in the fifteenth century. It was widely reprinted and catalysed the popularity of emblem books, which borrowed its imagery.[16] A metal tablet with hieroglyphs found in Rome in 1525 also attracted artists and scholars, such as the Paduan humanist Lorenzo Pignoria (1571-1631) who published a lavish edition of this 'Isiac table'. More recent insights have revealed that it was actually of Roman origin and merely mimicked Egyptian letters. Pignoria made an edition of Andrea Alciati's *Emblematica* (first edition 1505), one of the fashionable illustrated books that derived some inspiration from the hieroglyphs.[17]

Erasmus seems to have had Alciati's text in mind when he treated 'hieroglyphic' questions in a small excursus in his *Chiliades adagiorum* (Venice 1508) dealing with the motto *festina lente*.[18] Alciati's emblem illustrating this motto combines a dolphin, symbolising speed, with an anchor, denoting slowness (fig. 4). A visually similar image (combining a snake and an arrow) was given a different meaning, which suggests that 'hieroglyphic' symbolism was by no means unambiguous (fig. 5).[19] Its polysemic challenge was confronted in a linguistic context only a century later, when the Amsterdam professor Gerardus Vossius (1577-1649) analysed the feasibility of a pictographic script. His statements in *De arte grammatica* (Amsterdam 1635) were partly based on discussions with his 'best friend' Pignoria, revealing how the Dutch debate benefited from Northern Italy.[20]

Vossius's analysis reflects the incipient scientific interest in Egyptian picture writing in the early seventeenth century. For a *Thesaurus hieroglyphicorum* (Munich c. 1607), the Brussels artist and printer Nicolaas van Aalst (c. 1526-c. 1612) made engravings – which one historian characterised as 'remarkably accurate' – of inscriptions on obelisks in Rome.[21] Collectors such as brothers Gerard Reynst (c. 1570-1650) and Jan Reynst (1601-1646) in Amsterdam and Ernst Brinck (1582-1649) in Harderwijk acquired authentic Egyptian objects; Bernardus Paludanus's (1550-1633) Enkhuizen collection, which included three

mummies, even attracted internationally renowned philologists such as Grotius and Scaliger.[22] Dutchmen would have had the opportunity of seeing real hieroglyphs on a monumental scale had the Earl of Arundel – whose household welcomed many artists, including Rubens and Van Dyck, and Dutch linguists such as Johannes de Laet (1581-1649) – succeeded in buying the obelisk found on the Appian Way in Rome.[23] The Earl's advisors admired its 'figures' (i.e., the hieroglyphs), 'the best [they had] seen'.[24] However, the outbreak of the English Civil War prevented this large-scale logistical operation that would have altered London's skyline. Eventually, the Jesuit Athanasius Kircher (1602-1680) placed the obelisk on top of the Fountain of the Four Rivers in Rome. This scholar, known as the 'father of Egyptology', published what he pretended to be the translation.

Kircher remained the leading authority on hieroglyphic matters for the remainder of the century. A truly integrated approach to *res* and *verba* was a *leitmotif* in this polymath's writings, which were aimed at winning readers for the True Faith. His quest for a 'universal language' that was also the reconstruction of humankind's primeval vocabulary, spoken by Adam and first written down in hieroglyphs, recurs in his writings on Egypt and China, the Tower of Babel, Noah's Ark, cryptography, and symbolic logic. Moreover, he drove home his point through lavishly illustrated folio-sized books. When he was first publishing in Rome, he depended on many of the Northern artists active in that city. From 1661 onwards, he had his works printed directly by Johannes Janssonius in Amsterdam, probably inspired by the greater pool of illustrators available there. As one historian notes, such a long-term commercial publishing arrangement was still a rarity in the seventeenth century;[25] around a dozen engravers were involved, including some of the most accomplished of their day, such as Cornelis Bloemaert (1603-1692), Gérard de Lairesse (1640-1711), and Romeyn de Hooghe (1645-1708).[26] The priest and painter Lieven Cruyl (1634-1720), who was based in Rome for some time, seems to have been one of Kircher's favourites.[27] Not only artists,[28] but scientists too became familiar with the Jesuit's ideas, many of which were even published in Dutch.[29] Christiaan Huygens acquired Kircher's works (which inspired his *Cosmotheoros*) and no one less than Spinoza came to consult them.[30] Some of the Jesuit's earlier writings were also reissued in Amsterdam. Ultimately, to quote one historian, 'the team of Jesuit author and Protestant printer symbolised the cosmopolitan appeal of Kircher's books'.[31] It is therefore not surprising that Kircher's ideas and images depended in part on earlier Dutch scholarship.

In this regard, Kircher's predilection for Hermes Trismegistus – or the Egyptian deity Thot, the 'thrice-great' – stood out. This sage was credited with inventing writing and figurative art in order to preach proto-Christianity before Moses. He played a key role in Kircher's 'translations' of Egyptian inscriptions, which responded to a general trend: as Yates argues, 'in order to think on Renaissance lines about the hieroglyphs it was absolutely necessary to keep up belief in Hermes Trismegistus'.[32] Even though its attribution to Trismegistus was disputed, the rediscovery of the *Corpus Hermeticum* in the fifteenth century nevertheless sparked a lively

interest in pictography. We must bear this in mind because before the findings of nineteenth-century Egyptology, these ideas were common coinage for artists and scholars. In treatises on painting, the Hermetic myth presented an integrated approach to words and things, joining the revelation of the divine *logos* to the first works of art. Alberti's *Della pittura* (1435) stated that 'Trismegistus, an ancient writer, judged painting and sculpture to be born at the same time as religion'.[33] As the Dutch art theorist Franciscus Junius (1591-1677) echoed, 'Egyptian Hermes', a contemporary of Osiris, Noah, and Dionysus, 'began the veneration of the gods (...) and embellished his life with all arts'.[34] The most explicit, however, was the Spanish painter Vicente Carducho (1576-1638), who added that the Egyptian sages 'made themselves understood in an elegant manner with symbols of men and animals'.[35]

In the early seventeenth century, the most ardent defender of the 'thrice-great' sage was Otto Heurnius (1577-1652), keeper of the collection of Leiden University's anatomical theatre, the most important of its kind in all of Europe. Frantically seeking Egyptian objects through a contact in Aleppo, he managed to acquire several stones with inscriptions and images of Isis 'that are full of hieroglyphs'.[36] He published his observations in *Barbaricae philosophiae antiquitatum libri duo* (Leiden 1600). This book sought the primeval wisdom as God had revealed it to Adam: Trismegistus played an important role as he had been taught directly by Noah and one of his sons.

6
Egyptian burial vase 'Leu Leu'
Leiden, Rijksmuseum voor Oudheden
(photo: Rijksmuseum voor Oudheden, Leiden).

7
Image of Egyptian burial vase (see fig. 6)
Athanasius Kircher, *Oedipus Aegyptiacus*, Rome 1652-1654
(photo: Universiteitsbibliotheek, Leiden).

Fig. III

Oraculum Canopicum ex lapide marmoreo dig. crassitudinis. ex Museo Viri Illustris D. Gerardi Reinstij Amsterodamensis

Oraculum Canopicum

Ex Museo Illust. Viri D. Gerardi Reinstij Senator. et Scab. Amstelodam.

Canopus ex thea glyphico modo Fame

Ægyptius tre luero Her Warty in palatio tiano.

Fig. XII

Canopus Mammitius

Fig. IV

Genius Anorgoneos Canopicus

Ex Museo Francofurtensi cuiusdam anonymi

Fig. V.

A Pars anterior

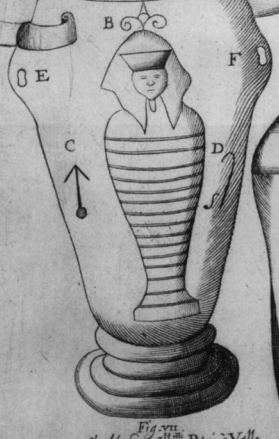


Fig. VII

Ex Museo Ill^mi. Petri à Valle

Ex Museo Gerardi Reinstij Senator. et Scabini Amsterod.

Fig VI Pars Anterior

Fig VI Pars posterior

Canopus Farnesianus

R

In palatio Bosiorū olim, modò Equitū Melitenſi.

S

In palatio Bosiorum olim, modò Equitum Melitenſium ord. S. Iōis Hierosol.

Fig. V.

Pars posterior

Fig. XI

Ex Museo Petri Stephanonij

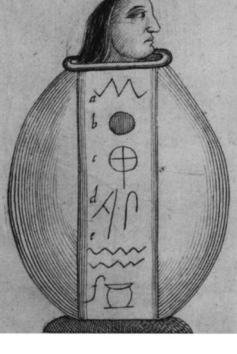


Fig. VIII

Ex Museo Equitis Hippolyti Vitellischi Rom.

Fig. IX

Fig. X

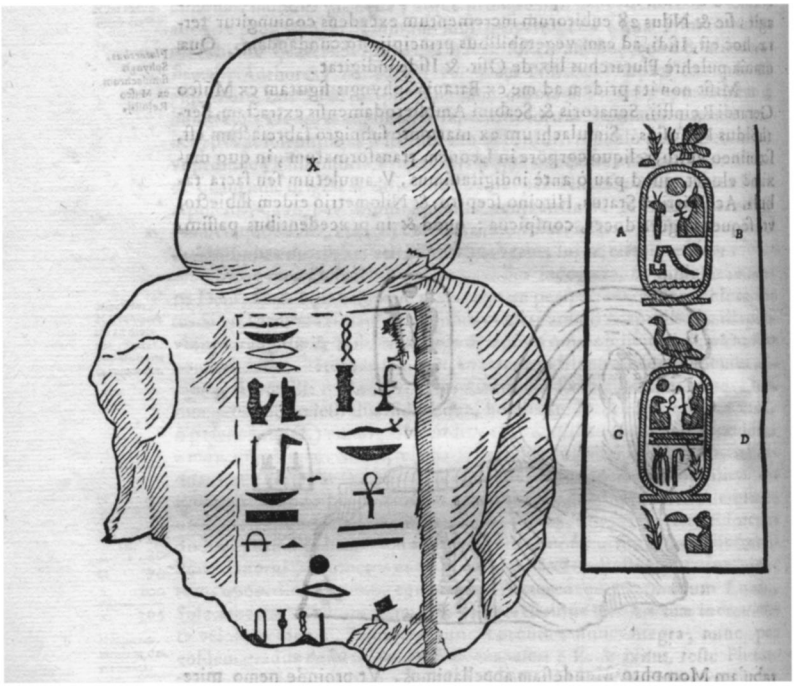
Ex Museo Perſciano Aquiſextijs

Kircher came to depend greatly on Heurnius, who placed the invention of hieroglyphs much earlier in history than was usual. To the Dutch scholar, they were direct remnants of the lost Adamic vocabulary, the 'primitive language' in which words and things were identical. This idea became the basis of Kircher's ideas on not only pictography but also the history of the world. He argued that all civilisations were offshoots from the 'one primeval religion' that had originated in Egypt (with modern Catholicism as its purest representative). The main 'proof' for this thesis was the allegedly pictographic nature of the Egyptian hieroglyphs, Chinese characters, and Meso-American writing. Pictography thus became essential to Kircher's account of sacred history, in which he contended that all languages could be traced back to a common source, the primitive tongue spoken before the Flood: 'Just as the senses give the same report to all men at all times, so too the first language (...) had perfectly understood reality'.[37]

To substantiate this far-reaching view, Kircher published his correspondence with Heurnius in the book in which he claimed to have translated the hieroglyphs, *Oedipus Aegyptiacus* (Rome 1652-1654). For the accompanying illustrations, Kircher's envoy in the Netherlands, Barthold Nihusius (1589-1657), ordered drawings of one of Heurnius's objects, an Egyptian urn still in the collection of Leiden's Rijksmuseum voor Oudheden (figs. 6, 7).[38] Some of Brinck's Egyptian works were also depicted in the book; nineteen illustrations were based on objects in the Reynst brothers' collection (figs. 8-10).[39]

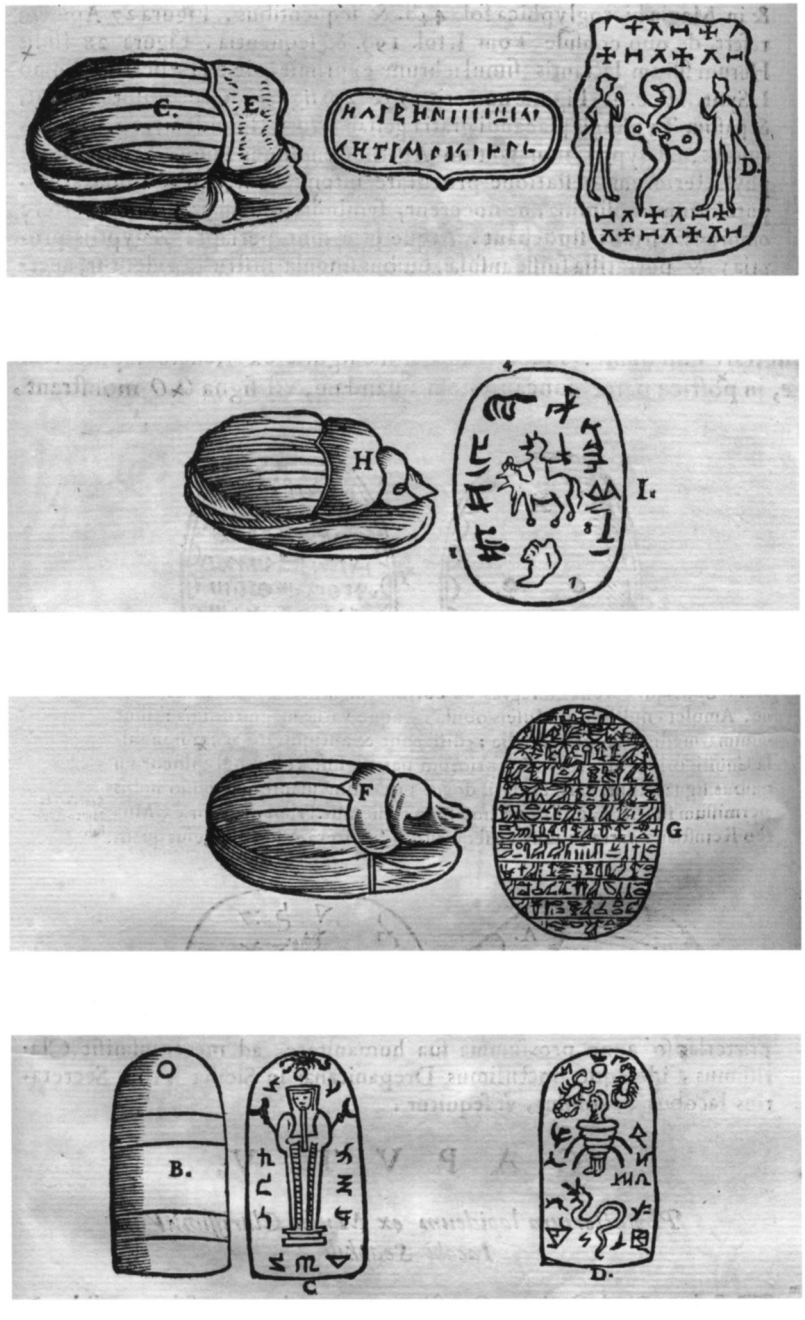
Heurnius's belief that the rediscovery of the *Corpus Hermeticum* heralded a new era of Egyptian wisdom in the Netherlands may have

8
'Statua constans marmore albo ex Cimeliarchio Domini Gerardi Reinst, Senatoris et Scabini Amstelaedamensis, ab eruditissimo Bertholdo Nihusio mihi transmissa'
burial vase from the Van Reynst collection, reproduced recto and verso (Fig. V, center, lateral sides) and *'Oraculum Canopicum ex lapide marmoreo dig. crassitudinis ex Museo viri illustris D. Gerardi Reinstij Amsterodamensis'* (Fig. III, top left), in: Athanasius Kircher, *Oedipus Aegyptiacus*, Rome 1652-1654, vol. III, 1654, facing p. 30 (photo: Universiteitsbiliotheek, Leiden).



9
'Sphyngis simulachrum ex Museo Reinstij'
Athanasius Kircher, *Oedipus Aegyptiacus* (Rome 1652-1654, vol. 3, p. 458) (photo: Universiteitsbibliotheek, Leiden).

10
'Figurae ex Reinstiano museo'
Athanasius Kircher, *Oedipus Aegyptiacus* (Rome 1652-1654, vol. 3, p. 524-525) (photo: Universiteitsbibliotheek, Leiden).



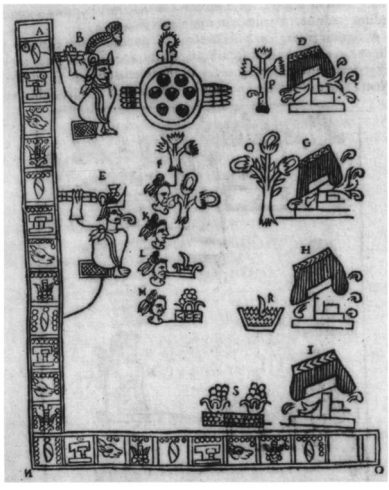
raised the eyebrows of modern historians of science, but it was certainly not an isolated case.[40] The *Corpus* was translated into Dutch no less than three times: in the circles of the Antwerp printer Christopher Plantin (c. 1580), the Alkmaar physicist Cornelis Drebbel (1607), and the merchant-mystic Abraham van Beyerland (1643), respectively.[41] As we shall see, the discussion of the Adamic origin of pictography had a particular Dutch chapter.

The linguistic point of view

Besides the archaeological view engendered by the hieroglyphs in the Netherlands, there was a particularly lively discussion about the reconstruction of the 'primitive language' from before the Confusion of Tongues, and a somewhat less ambitious search for a universal script that could restore some of the lost linguistic unity. Here, theories about humankind's first speech looked to Dutch rather than Hebrew as a *lingua sancta*. Authors pleading for the emancipation of the Dutch vernacular, such as Simon Stevin (1548-1620) and Dirck Volckertsz. Coornhert (1522-1590), developed the theory that Dutch was just as 'primeval' as Hebrew: in contrast to the ornate and mannered modern Romance languages, Dutch exemplified stoic brevity and thus stood in a more direct relation to the things themselves. The most explicit writing on the subject was *Origines Antwerpianae* (Antwerp 1569) by Joannes Goropius Becanus (1519-1572), who interpreted compound words, which are so frequent in Dutch, as combinations of the basic monosyllabic signs.[42]

As a matter of course, since Dutch was the language spoken by Adam, Becanus connected it to the hieroglyphs and their invention by Hermes Trismegistus, referring to the Isiac table in particular.[43] In his *Hieroglyphica* (1580), he disagreed with those who credited Moses with the invention of writing: the prophet's Egyptian education itself testified to the earlier use of hieroglyphs. Becanus thus derived Thot from the Dutch ''t Hoot' or 'het Hoot', meaning 'the head' and clearly referring to God as the head of the universe. Adding scholarly clout to his etymologies, the author connected them to works of art, noting that many ancient Hermae – statues of Hermes – were simple squared columns lacking all detail save a head: 'Do you see how the vocal symbol coincides with the statue and how aptly each sign expresses the same notion?'[44]

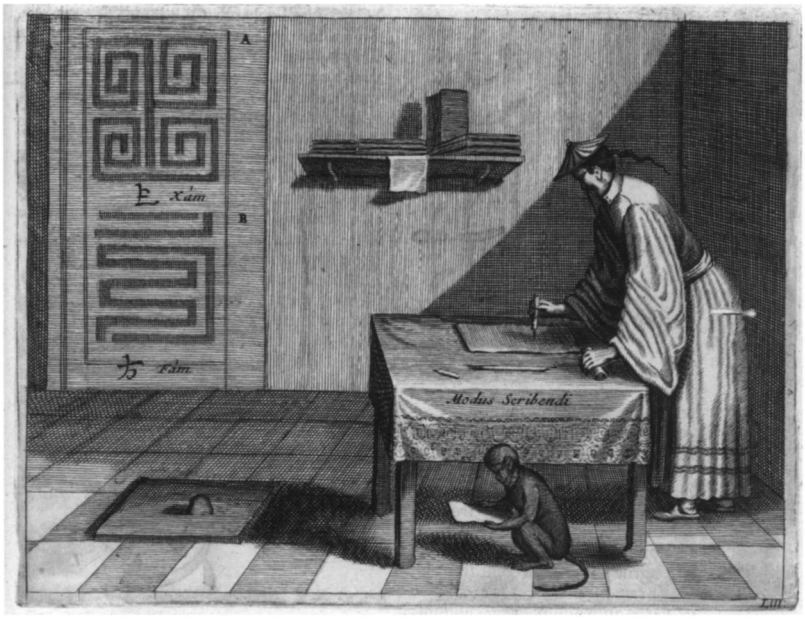
Adamic language gained urgency towards the year 1656. Those who took a literal view of biblical revelation had lofty expectations: the renewal of Noah's covenant, putatively instituted 1,656 years after the creation of Adam, was supposed to take place and divine knowledge, lost after Babel, would be revealed once more. In the Netherlands, this belief surfaced in the controversy surrounding the ideas of the Antwerp-based scholar Isaac la Peyrère (1596-1676). In his *Prae-adamitae*, printed in Amsterdam in 1655 and promptly translated into Dutch, La Peyrère held that there had been people before Adam, which explained why the earth was extensively inhabited so soon after Adam's creation.[45] While still in manuscript form, these ideas sparked a Dutch discussion about how humankind had populated the entire world:[46] in 1642, Hugo Grotius penned a refutation arguing that all people descended from Adam, based on his observation that the American languages developed from the Germanic ones.[47] In response, Johannes de Laet (who had met La Peyrère in Leiden in 1646) severely criticised Grotius's work, demonstrating that the Amerindian languages had no affinity to Hebrew or the European vernaculars.[48] For our discussion, it is relevant to note that Amerindian writing was generally seen as pictographic. Reacting to Grotius, the Harderwijk professor Georg Hornius (1620-1670; no relation to



11
Sample of Mexican writing
Athanasius Kircher, *Oedipus Aegyptiacus* (Rome 1652-1654, cap. IV, p. 33) (photo: Universiteitsbibliotheek, Leiden).

Heurnius) discussed the role of pictures in Maya and Aztec writing in order to derive American letters from Chinese.[49] He thus echoed Kircher, who printed an image of Aztec signs in *Oedipus Aegyptiacus* and argued that Egyptians ended up in the Americas via China (fig. 11).[50] Using pictography as a central argument, Hornius posited in his *De originibus Americanis* (1652) that the difficulty in learning the great number of Chinese characters (in his view at least 120,000) had led the Amerindians to use simplified characters. Whereas Chinese signs could express abstract notions, American pictograms were merely images of visible objects:[51] 'I confess that the way of writing among the ancient Mexicans and Chinese was not the same, but it was also not very different (...). The Chinese write with a paintbrush and one character comprises many letters and makes an entire word'.[52] In the grand debate about 'world history' and how to connect the civilisations of the New World to those of East Asia and the *terra australis nondum cognita*, the supposed hieroglyphic origin of the Chinese and Amerindian writing systems supported the catholic argument that all writing, language, and culture derived from a common Middle Eastern source.

Hornius's main opponent was another scholar inspired by La Peyrère, namely Isaac Vossius (1618-1689).[53] Dubbed a pocket-sized Kircher, Vossius was the most influential Dutchman to revise notions of sacred history and he elaborated many of the Jesuit's ideas.[54] In 1642 he even went to Rome, attracted by the 'Museo Kircheriano' with its ancient Egyptian and Chinese objects.[55] Vossius's text 'De artibus et scientiis Sinarum' (1685) was an implicit reaction to Kircher's monumental book on China.[56] Praising the clarity of Chinese draughtsmanship in particular, the Dutch scholar became the first European to rank Asian visual art above that of the West.[57] He also claimed that Chinese writing represented an uninterrupted cultural tradition of five thousand years: the letters might be 'very laborious, but the benefit reaped from them is in accordance with the labour, because even if one had learned only [Chinese] characters, one would seem to have accomplished more than if one had acquired knowledge of all languages that exist or have existed'.[58] Here, Vossius appears to have adopted Kircher's idea that Chinese letters, like pictograms with universal meaning, were independent of spoken language. The characters or *beeldletteren* had developed from images: 'The ancient Chinese based their letters on all things that present themselves to the eye, and revealed and expressed the thoughts of their mind solely through the varied combinations and compositions of these things'.[59] Kircher, who had the Haarlem artist Willem van der Laegh (1614-1674) engrave his characters, observed that the Chinese did not write with pens, but with 'paintbrushes'; their writing should rather be termed 'painting'.[60] His illustration of the Chinese way of writing therefore included a monkey, symbolising visual art as the 'ape of nature' (fig. 12).[61] In the earliest stage of Chinese civilisation, these images would have been painted by the mythical first Emperor, 'Fohi', obviously at the instruction of someone from the Near East, perhaps Noah's son Cham. In the course of the centuries, his figurative forms had become increasingly abstract:



12
'Modus scribendi'
Anathasius Kircher, *China illustrata* (Amsterdam 1667) (photo: Universiteitsbibliotheek Amsterdam, Special Collections).

> The origins of their writing (...) the [Chinese] learned from Father Cham, and from Mercurius Trismegistus, counsellor to his son Nefraim and the first instigator of pictograms. And surely, those ancient characters of the Chinese, which are equal to pictograms in all aspects, are an important proof for me to believe in this [Egyptian origin]'.[62]

Upon concluding his 'Grand Tour' and returning to the Netherlands, Vossius tried to rival Kircher's network in various ways, seeking contact with other Jesuits and with the governor of the Dutch East India Company to obtain manuscripts and printed texts on China.[63] However, he failed to consult the East Asians in the Netherlands, such as the Chinese Michael Shen Fuzong (c. 1658-1691), who visited the playwright Vondel in Amsterdam;[64] the two students at Leiden University, sons of a Dutch official and a Japanese woman, who were born and raised in Japan;[65] or the Japan-born mathematician of Harderwijk, Pieter Hartsinck (1637-1680). In contrast, Vossius's views on Chinese were informed chiefly by his vision of sacred history, which departed from Kircher's pious account. The Dutchman's controversial claims in 'De artibus et scientiis Sinarum' implied that Chinese writing had survived uncorrupted since before the Confusion of Tongues and even the Flood (which supposedly took place in 2349 BCE). This interpretation fuelled his doubts about the status of Hebrew as *lingua sancta*: since the Hebrew Bible was incompatible with Chinese chronology, he came to the radical conclusion that the text was unreliable.[66]

Vossius suggested replacing the accepted biblical chronology with an alternative one, but refrained from drawing the ultimate conclusion: if the arts and letters of China were as old as he assumed, Chinese could well

have been the language God spoke to Adam when he named the animals and had perfect and complete knowledge. On the basis of Vossius's writings, however, the British architect John Webb (1611-1672) claimed that all languages are essentially derived from Chinese in his *Essay endeavouring the probability that the language of the Empire of China is the primitive language* (1669).[67] Webb – the only seventeenth-century architect whose designs were inspired by Chinese calligraphy – referred extensively to Vossius to argue that the Chinese had letters before the Flood, and that they lived too far away to be guilty of Babel.[68] Suggesting that their script might be older than the hieroglyphs, he ultimately concluded that the Chinese valued their written characters above works of art:[69]

> The Chinois give willingly great sums of money for a copy of their antient characters well-formed, and they value a good writing of their now [*sic*] letters far more than a good painting, whereby from being thus esteemed, they come to be reverenced. Insomuch that they cannot endure to see a written paper lying on the ground.[70]

In the Netherlands, ideas on Chinese art and writing, and their consequences for sacred history, became common and met with popular ridicule. In a 1698 satirical magazine, a mock inventory of East Asian imports listed a drawing 'in which 12 mandarins were sketched with a single stroke of the brush', echoing Vossius's praise of Chinese draughtsmanship, as well as 'the genealogical register of the Preadamites in Chinese characters'.[71]

Besides this linguistic approach to pictography – which, at the risk of being anachronistic, may be called 'historical' or 'comparative' – there was a complementary and more strictly philosophical approach. Gombrich has addressed how, according to Renaissance scholarship, vision conveyed a specific kind of pre-predicative knowledge, more fundamental than alphabetic language. Some images were regarded as direct reflections of Platonic ideas, something that made seeing the most truthful kind of perception.[72] The pictographic project entailed this great ambition of Renaissance scholarship: a language in which words and things stood in a direct one-on-one relationship.

It should first be noted that the tradition of art theory offered several arguments in support of this idea. In his treatise on painting of 1585, Romano Alberti mentioned Amerindian writing in order to call to mind the original designation of painting as ζωγραφία – writing not based on alphabetic letters, but on living things.[73] In the Netherlands, Gerardus Vossius's treatise on painting, 'De graphice' (1650), resorted to the same argument from etymology, explaining how the Greek verb γράφειν meant 'painting' as well as 'writing', to prove that the two activities were closely interrelated.[74] Karel van Mander saw training in draughtsmanship as even more fundamental than literacy (or 'grammar', as he called it), stating that 'the noble and learned art of grammar has been reared and nurtured swiftly by [draughtsmanship], which taught her where to obtain those letters and characters through

which people in various languages adequately understand each other's meanings'.[75]

Echoing these artistic sentiments, some scholars developed the idea that because images represent nature more closely than language, they could be used as signs with universal meaning or Real Characters (expressing *res* rather than *verba*). This concept was introduced by Francis Bacon (1561-1626), who differentiated these characters from 'vocal characters', such as letters of the alphabet: 'it is the use of China (...) to write in Characters Real, which express neither letters nor words in gross, but things or notions'.[76] In the Netherlands, the polyglot and emblematist Hermannus Hugo (1558-1629) elaborated this idea in *De prima scribendi origine* (Antwerp 1617), the earliest systematic analysis of script from its origin to the printed book.[77] Although Hugo was indebted to Becanus's hieroglyphic theories, his true interest was the Real Character and he demonstrated his knowledge of the missionaries' observations about Chinese writing (a Jesuit himself, he translated East Asian mission letters into Latin). Noting that the Chinese wrote with brushes identical to those used for painting in Europe, Hugo aspired to a universal script:[78] 'When individual letters are qualified to denote not words, but the things themselves, and when all these [letters] are common to all people, then everyone would understand the writing of the various peoples even though each one would call those things by very different names'.[79] The ideal of universal communication through pictures may have inspired his emblem book *Pia desideria* (1624) illustrated by Boëtius à Bolswert (c.1580-1633), which became popular throughout the Netherlands.[80] In any case, another Antwerp missionary, Johannes Steegius, eventually tried to 'explain the Christian doctrine more accessibly through a picture language' (in *De Christelycke leeringhe verstaenelycker uytgeleyt door eene beelden-sprake,* 1647). Although aimed at the conversion of illiterate Flemish peasants, this project demonstrated the impact of the Jesuits' overseas experiences.[81]

Vossius's *De arte grammatica* explored further how pictography could aid cross-cultural communication. To explain the possibility of Real Characters the author discussed hieroglyphs, the numbers in arithmetic, and astrological symbols representing planets.[82] Vossius's highest hopes, however, were for Chinese writing. From the fact that a single script was used for unrelated languages, he concluded that each sign was a miniature picture of the object it referred to:

> (...) for the Chinese, there are no fewer letters than there are words: however, they can be combined together, so that their total number does not exceed 70,000 or 80,000 (...). The Chinese and Japanese, although their languages differ just as much as Hebrew and Dutch, still understand one another if they write in this manner. For even if some might pronounce other words when reading, the concepts would nevertheless be the same. Indeed, now as people of different languages who see the same thing, understand the same thing, likewise, those who see the sign of a thing would have the same understanding of it.[83]

Since Chinese characters express concepts without the medium of language, they are similar to paintings: 'In the same sense, all people obtain the same concept from the painting of a human figure, a horse, a tree, or a house'.[84] Because Chinese signs expressed things directly, Vossius concluded that the number of letters equalled that of the categories of objects: it was possible to learn 'as many characters as there are things', if done from an early age onwards.[85] This idea must have seemed plausible to his contemporaries as the art of memory itself was based on the visualisation of concepts. After all, the mind's capacity to store images had been trained in Western scholarship since antiquity, and the Chinese, who seemed to be superior in other arts too, might have brought the artificial memory to perfection.[86]

Although the Jesuits in Rome and Paris dominated scholarship on China, linguistic speculation was a decidedly Northern European occupation. Together with Bacon, Hugo and Vossius were the first European scholars to propose a universal language based on Chinese.[87] Their ideas were particularly influential in England, where the philosophers John Wilkins (1614-1672) and George Dalgarno (1626-1687) assiduously developed a complete Real Language. Dalgarno, who also worked on sign language, addressed the 'far-seeing Chinese': 'do not, we beseech you, render blind us one-eyed ones, anxious as we are to look more intently at your affairs, by displaying enchanting images in place of letters'.[88] For this author, the validity of pictograms lay in their antiquity: 'As evidence that *real* characters were in use before *vocal* characters, I may cite the most ancient Chinese and Egyptian peoples'.[89] Probably mindful of Vossius's search for the roots of language in principles that were universally understood, Wilkins praised *De arte grammatica* for exploring the possibility of a 'natural grammar'.[90] For the convenience of Englishmen, a 1657 polyglot Bible likewise advocated Vossius's proposal for a universal language.[91]

The encyclopaedic point of view

In this quest for a historically primitive language and a philosophically universal one, the two strands of research coincided in scholarly projects devoted to mapping out human knowledge – historical, natural, and artificial – in an ordered system. One example was Jan Amos Comenius's (1592-1670) ambition to classify and communicate knowledge of the world through simple images as outlined and illustrated in his *Orbis sensualium pictus* (1658) (fig. 13).[92] From 1656 onwards, he developed his educational project in Holland, possibly attracted by the writings of Gerard Vossius, whom he had hoped to visit.[93] As Slaughter points out, this project was closely related to a universal language scheme.[94] Comenius expected Real Characters to be the basis for the reconciliation of humankind. Speaking of the 'pleasing light' granted by the 'knowledge we received about the symbolic characters used by the Chinese, namely that these characters help men speaking different languages to understand one another', he asked: 'If this is a good thing, why should we not devote ourselves to the discovery of a Real Language,

13
'Ein lebendiges und stimmbares Alfabeth'
J.A. Comenius, *Orbis sensualium pictus quadrilinguis* (Nuremberg 1679) (photo: Universiteitsbibliotheek Amsterdam, Special Collections).

which all men equally should understand?'[95] Ultimately, Comenius wanted to replace education based on alphabetic letters with one based on pictures. *Orbis pictus* thus begins with an admonishment to the reader:

> Before all other things, you must learn the simple voices that constitute human speech: those to be produced by animals, and imitated by your tongue, and painted by your hand. That is what we shall seek in the world, and we will observe every object: here you have a living and speaking alphabet.[96]

In relation to his ideal of *pansophia*, or universal knowledge that was communicated through universal language, Comenius envisaged *pantaxia*, an ordered system of all things.[97] This brings us to the relations between pictography and encyclopaedism. His educational treatise appeared in German as *Die sichtbare Welt* (1662),[98] and thus is linked to other books with encyclopaedic pretensions in the Netherlands. We are first reminded of Van Hoogstraten's treatise on painting subtitled *De zichtbaere werelt* (The visible world). Its encyclopaedic scope surfaces in the organisation of the chapters, dedicated to the nine Muses and each associated with one of the planets; the elaborate title pages provide visual résumés of the contents of each chapter and probably served a mnemonic function. Emblem books often shared such a format following a physical or philosophical structure, such as the planets, the ages of man, the hierarchy of creation, or simply the days of the week.[99] One example is Jacob Harrewyn's *'t Jaar d'xii maanden, vii dagen en iv getyden* (The year in twelve months, seven days and four seasons; Amsterdam 1698); this author also published *De xxv letteren van het ABC* (The twenty-five letters of the ABC; Amsterdam 1694), with 25 chapters devoted to the letters of the alphabet.

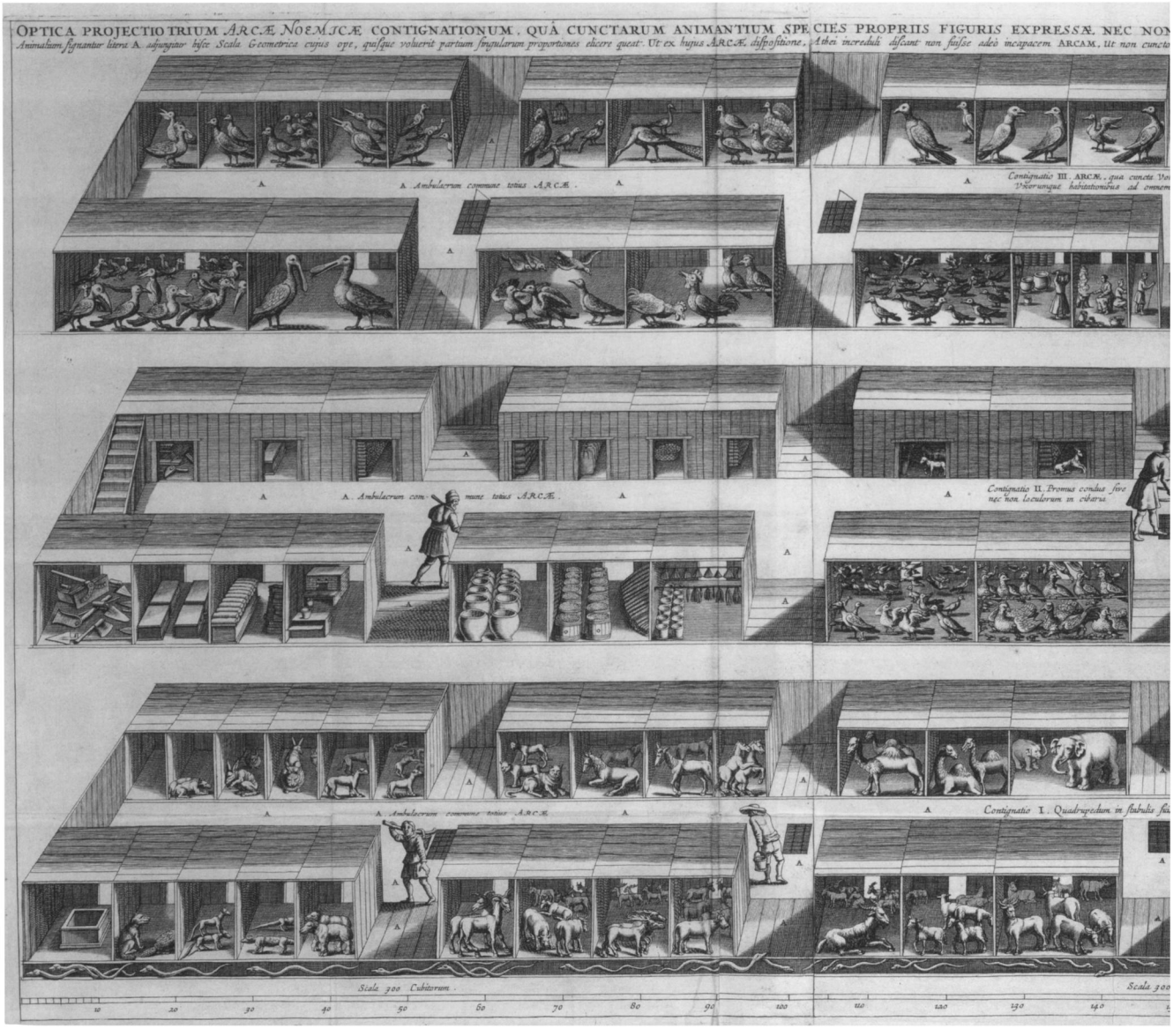
These emblematic works suggested that a sequence (alphabetic or otherwise) of images would be able to represent the variety of Creation in a structured manner. Emblem books titled *Cabinet*, *Schatzkammer*, or *Musaeum* were similar to taxonomic projects such as cabinets of precious rarities and 'paper museums' reproducing antiquities – to quote a recent historian, 'There were also more exotic creatures and delicate monsters than could ever fill any princely Wunderkammer'.[100] One such book in which word and image supported each other in an encyclopaedic fashion was Kircher's *Arca Noë* (Amsterdam 1675), which presented the Ark as the first museum. The images by Lieven Cruyl show the precise location in the boat of more than a hundred species (fig. 14).[101] It is not difficult to situate this project within the larger context of Kircher's linguistic interests. In the Ark, the animals still had the names given by Adam when he first coupled words to things.

Slaughter's analysis of the cross-pollination of scientific taxonomy and universal language schemes raises the question of whether the organisation of encyclopaedic collections in the Netherlands was related to the pictographic ideas formulated by Hugo and Vossius.[102] The activities of some collectors suggest it was, at least in a general sense. Responding in part to the division of the planetary spheres, the Antwerp physician Samuel Quiccheberg (1529-1567) initially envisaged a comprehensive taxonomy for 'naturalia, mirabilia, artefacta, scientifica, antiquitates, and exotica'.[103] Other collectors soon drew a parallel between similar taxonomic views and their interest in language: probing for the meaning of the objects in their possession, for instance, they too tried to decipher the hieroglyphs. Trained in a Bolognese collection based on a fascination with Egypt and the primitive language, the Dutchman Aelius Vorstius (1565-1624) may have initiated the enduring Northern European interest in an integrated approach to words and things.[104] Brinck's cabinet of antiquities thus came to include texts from East Asia. De Laet, who

collected hieroglyphs and Chinese writing, even examined Amerindian script: as director of the Dutch West India Company he contacted the governor of Dutch Brazil.[105] Various Dutchmen eventually gravitated towards the museum of the Dane Olaus Wormius (1588-1655), who tried to decipher the runes by comparing them to hieroglyphs.[106] In this connection, it is worth remembering Jorink's observation that Dutch collections were usually housed in libraries and thus expressed the interplay of *res* and *verba*.[107] He points out Jan Woudanus's (1570-1615) image of the Theatrum Anatomicum in Leiden, which foregrounds the skeletons of Adam and Eve, possibly referencing the age in which man gave names to all things (fig. 15). Jorink even interprets a rarity in the theatre, the philologist Isaac Casaubon's (1559-1614) bladder, as testimony to the integrated approach of language and *naturalia*. In any event, the collection contained books written in Chinese and Egyptian artifacts. We should not be surprised to find that its keeper was Heurnius, whose influential hieroglyphic work has been mentioned above.[108]

By now it should be obvious that more was at stake than scholarly exoticism. The desire to adjust things to words responded directly to didactic theories. Historians have pointed to the connection between cabinets of curiosities and the reform of pedagogy in the seventeenth century:[109] the didacticism of authors such as Comenius was based on the vernacular and what German scholarship calls *Realienkunde*, to teach by demonstration using images and objects (also useful, for instance, in educating the Amerindian heathens).[110] As 'the sciences find easier entrance through the eyes than through the ears', the 1666 catalogue of a Schleswig collection compared the Book of Nature to a learning book for young people.[111] In England, similar statements inspired the Royal Society, with its motto *Nullius in verba* (on the basis of nobody's words), to compile a scientific cabinet. Most eloquent in this respect was Robert Hooke's (1635-1703) statement that material objects should be classified according to the order of nature, just as words are organised by grammar. He aspired to 'as full and compleat a collection of all varieties of natural bodies as could be obtain'd, where an inquirer (...) might peruse, and turn over, and spell, and read the book of nature, and observe the orthography, etymologia, syntaxis, and prosodia of natures grammar'.[112]

In the Netherlands, the concern with education through a grammar of nature found expression in the metaphor *schoole der werelt* (school of the world), to use the title of an emblem book with edifying exegeses of objects from everyday reality.[113] The metaphor harked back to Comenius's statement on the living and speaking alphabet of nature: to this scholar, 'the physical world is a visible showplace of God'.[114] Such a view was welcomed by Calvinist readers, who looked for divine revelation not in the stories of saints or devotional imagery but in God's Creation. After all, had not Calvin himself called upon 'the speechless teaching of heaven and earth'?[115] As Jorink demonstrates, the metaphor of the Book of Nature inspired scientific culture throughout the Netherlands,[116] and Bakker observes analogous developments in seventeenth-century landscape painting.[117] Treatises of art theory support their conclusions. The British draughtsman Henry Peacham (1576-1643), who often crossed the North



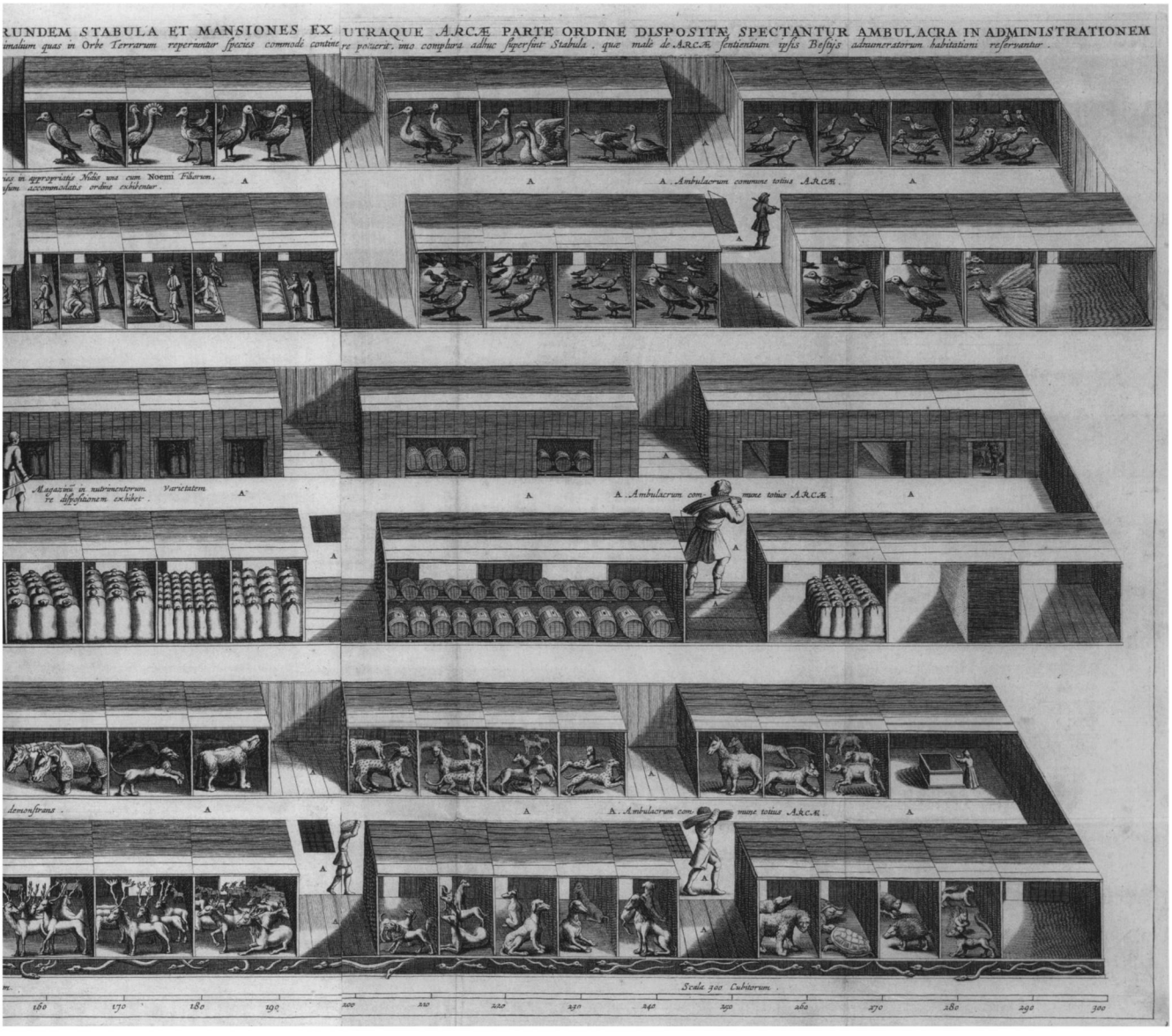
14

Lieven Cruyl, *Noah's Ark*

Athanasius Kicher, *Arca Noë* (Amsterdam 1675)

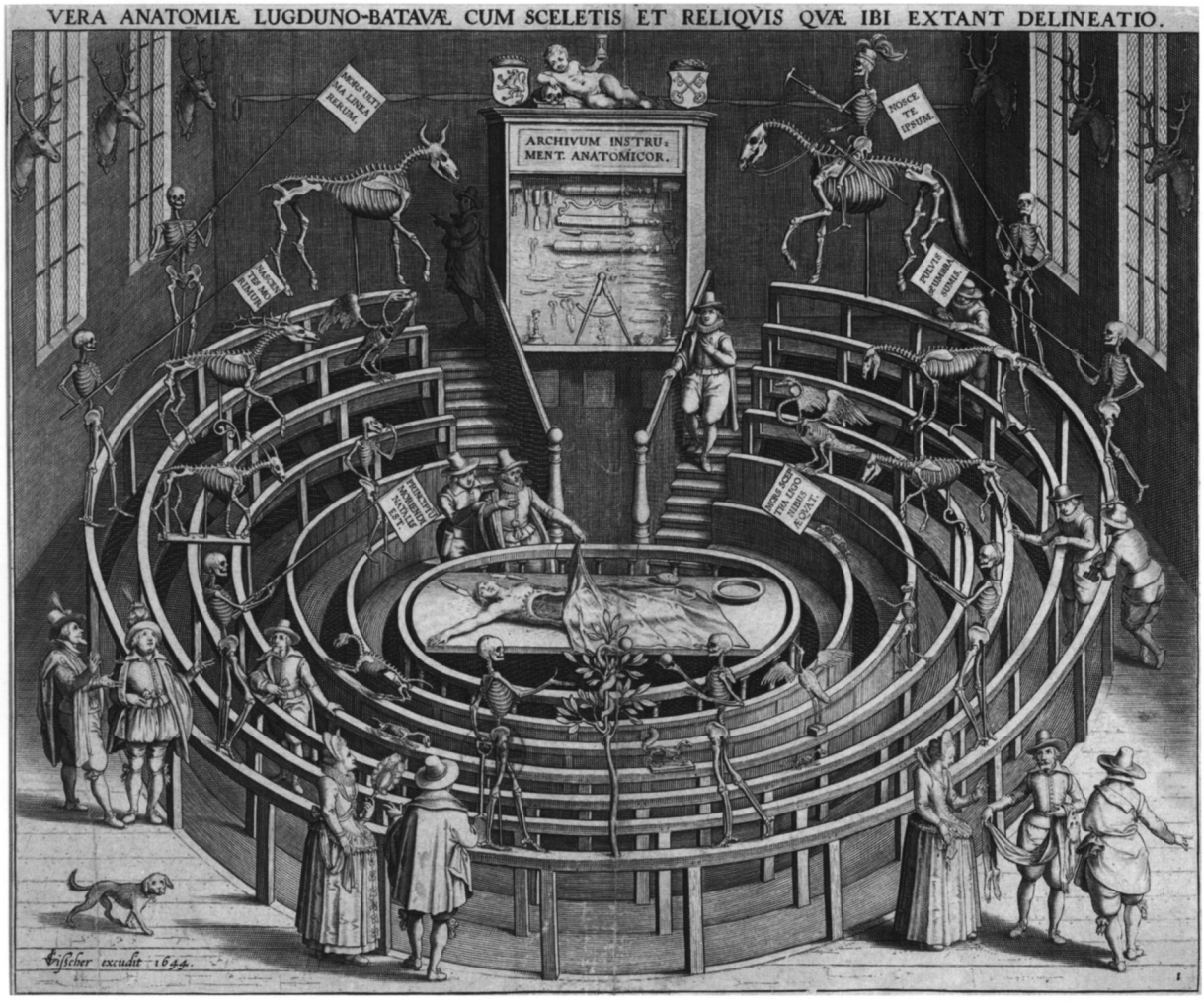
(photo: Koninklijke Bibliotheek, The Hague).

Sea and counted Dutch artists among the best he knew, attested that 'since [painting] is onely the imitation of the surface of nature, by it as in a booke of golden and rarelimned letters (...) wee reade a continuall lecture of the wisedome of the almightie Creator'.[118] He shared his outlook with Catholics such as Cardinal Gabriele Paleotti (1522-1597), who observed that the Bible was written so late (i.e., 2,370 years after the Creation) because the Creator first wished to teach mankind through the things themselves 'that can be universally understood by all (...) the silent voices that come from the things created by God'.[119] The link to pictograms and emblems, then, was considered obvious: a 1638 English emblem book stated that 'before the knowledge of letters, God was



known by hieroglyphicks; and, indeed, what are the heavens, the earth, nay every creature but hieroglyphicks and emblemes of His glory?'[120]

The 'reading' of the Book of Nature thus inspired an essential metaphor for our discussion, namely the equation of the elements of the visible world, these 'rarelimned letters', with an alphabet. Already in 1598, an explanation of the catechism of the Dutch Reformed Church stated that 'all visible creatures are like letters in a beautiful book that refer us to their Creator'.[121] According to the Leiden professor Friederich Spanheim (1632-1701), the existence of God is revealed in 'this book of nature, in which just such a beautiful combination of creatures can be found as one made by so many letters that constitute a wonderful meaning'.[122] He clarified the metaphor of



15

Claes Jansz. Visscher, after Joannes Woudanus, *Leiden's anatomical theatre*, 1644

engraving, 38 x 32 cm

(photo: Universiteitsbibliotheek, Leiden).

seeing visible things as letters, stating that they only obtained their meaning through a certain order. Atheists who maintain that the order in nature does not prove God's presence are as witless as those who think that a 'heap of characters', or the letters in a printer's shop, 'thrown in the air and there confused and mixed together, could combine themselves so evenly and with such order that one could see those letters and characters assemble into an edifying book or a well-made poem'.[123]

The logical point of view

The didactic importance allotted to vision that seems to inspire the 'alphabet of the world' metaphor points to a fundamental aspect of education: the art of memory and the theories of invention and argumentation that were based on it. Here, as we shall see, notions about 'nature's grammar' converge with ideas about series of images that reflect principles of logical organisation.

As, according to Aristotle, pictures leave a more lasting impression than words in the mind, the central procedure in early modern mnemotechnics was to transform written or oral information into mental images of every kind and organise them in an imaginary spatial architecture, responding to Cicero's statement that 'one could use the places [of memory] instead of the wax [of the writing tablet] and the images instead of the letters'.[124] The formation of mental images was interpreted as the condensation of inchoate sense impressions into clear-cut elements that could serve as the basis for new ideas. One of the masters of this technique, Giordano Bruno (1548-1600), described artificial memory as the presentation of thoughts, singled out for attention 'in the likeness of painting', in 'a distilled and developed order of conceivable species, arranged as statues, or a microcosm, or some other kind of architecture (...) by focusing the chaos of the imagination'.[125]

In the Netherlands, the importance of images for memory was stressed particularly in the education of children. Erasmus, for instance, stated that

> a youth will learn [texts] more eagerly and retain them better in his mind when one shows him the themes well illustrated before his eyes (...). Most children enjoy painted scenes of hunting: what a multitude of trees, animals, birds, and quadrupeds there is for them to learn while they play![126]

Later, Vossius, outlining how the teaching of Latin vocabulary should be enlivened by painted scenes from the Bible, referred to an image 'that represents the message of creatures (...) the sun, the moon, the stars, a man, a woman, a tree, a snake (...). When the child is asked to identify every individual thing in this image, he will also learn to name them in Latin'.[127] The author who came closest to putting these ideas into practice in an educational framework was Comenius. He pleaded for displaying pictorial summaries of textbooks in the schoolroom: 'numerous texts can be represented concisely by means of illustrations (...), which will daily exercise the students' senses and memory'.[128]

The relevance of mnemonics for the pictographic project is apparent in the notion that an artificial language based on totally arbitrary symbols would be extremely difficult to memorise. Pictograms, therefore, were the most reliable Real Characters. In the words of Gottfried Wilhelm Leibniz (1646-1716), the script of a universal language should be composed of 'geometrical figures and pictures of the type used in the time of the Egyptians, and today by the Chinese; pictures which cannot be reduced to a fixed alphabet, or to letters, which are a terrible impediment to memory'.[129] For our discussion, it is interesting to note that within the context of education, Leibniz referred to one of the teachers of artificial memory in the Netherlands, Lambert Schenkel (1547-after 1624).[130] This wandering scholar from Den Bosch, a Dutch rival to Bruno, offered a ten-day course in mnemotechnics, extracting an oath of secrecy from all the participants.[131] He devoted attention to the subject in *De memoria libri duo* (Douai and Antwerp 1593) and *Gazophylacium artis memoriae*

16
Mnemotechnical images of the patriarchs Adam, Seth, and Enos
Johannes Buno, *Tabularum mnemonicarum (...) simulacris et hieroglyphicis figuris delineata exhibetur* (Lüneburg 1662-1664).

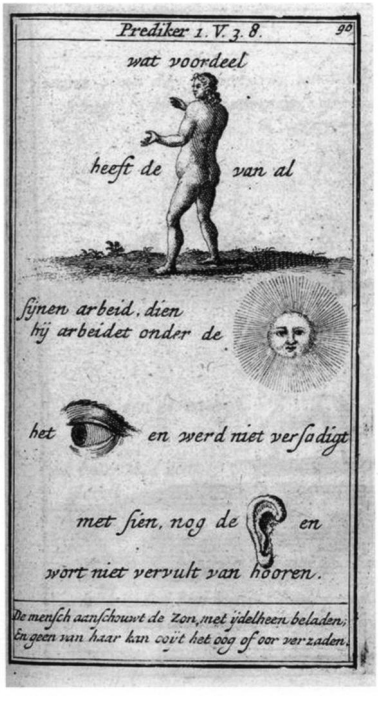
(Strasbourg 1610).[132] Later, however, his works and reputation were deemed to have discredited the art of memory as being devoid of scientific value. Descartes even dubbed him 'that muddle head'.[133] Schenkel may have used imaginative rebus-like signs that were popular among artists from Leonardo onwards.[134] Still, it is important to point out that precisely the fantastic nature of the artificial memory's imagery was one of its central tenets: it assumed that bizarre images stick best in the mind.[135] This idea led to remarkable concoctions: the German educationalist Johannes Buno (1616-1697; not to be confused with Bruno) wanted to teach history by literally combining primitive images. To give just one example, his image representing the story of the patriarch Enos involved a dog and a large hand above a comb growing out of a figure's back, all on top of a house inscribed with numbers and letters (fig. 16).[136] Regardless of the question of whether these images fulfilled their mnemotechnical scope, they shed light on the *raison d'être* of some of the more abstruse imagery in seventeenth-century book illustrations and propaganda prints.[137]

Especially in German-speaking Europe, the presumed importance of images for mental processes inspired 'hieroglyphic bibles', 'image catechisms', rebuses, and figure alphabets basing devotional practices on techniques from the art of memory – even card games were used as

mnemonic aids in this sense.[138] Van Sambeeck's figure alphabet, mentioned at the beginning of this article, was surpassed by far by Melchior Mattsperger's *Geistliche Herzenseinbildungen* (Augsburg 1685, translated into Dutch in 1720), which consistently replaces words in biblical verses with pictures. Here, the images should no longer be interpreted in an emblematic fashion by looking for multiple layers of meaning: they are little more than visually perspicacious aids for memorising Scripture (figs. 17-18).

The idea that thought processes are the reordering and combining of mental images made extrapolation from memory to logic and obvious step. Thus, the most exalted notions connected to pictography not only entailed the view that an image script makes a more direct imprint on the mind than alphabetic writing, but also suggested that a complete notation system could be the perfect model for thought. In regard to logical theory in the Netherlands, Rudolf Agricola's (1444-1484) writings, in which the visual arts play an important role, provided a foundation.[139] For the seventeenth century, however, the Dutch contribution can be valued only in an international context. Leibniz was the author who most comprehensively explored the themes discussed above in a coherent whole, including pictography, Chinese characters, primitive language, logic, and collecting. (Not surprisingly, he also became involved in the debate about sacred history sparked by La Peyrère and Vossius.[140])

A great deal of Leibniz's scholarly efforts was aimed at constructing a universal language, or *lingua characteristica*, to act as a system of notation for the 'alphabet of human thoughts' – for primitive concepts.[141] Leibniz's basic premise was that only by combining primitive concepts could one

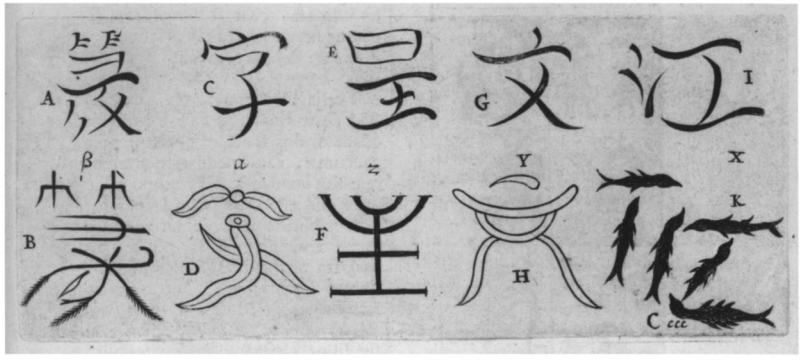


17 and 18
Two images
Gerard Puppius Hondius, *De kleine printbybel. Waar in door verscheide afbeeldingen een meenigte van bybelsche spreuken verklaart werden. Tot vermaak der jeugd, en om (…) de spreuken der H. Schrift by na zonder moeite in de geheugenis te brengen* (Amsterdam 1720 [orig. 1685]) (photo: Universiteitsbibliotheek Amsterdam, Special Collections).

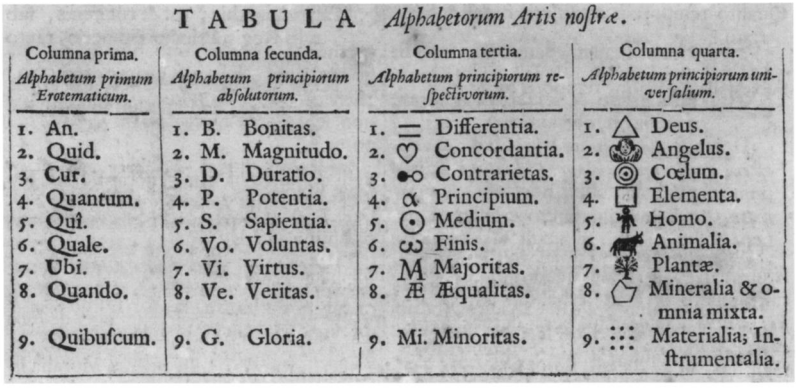
produce more complex ones and thus gain new knowledge.[142] Studying these combinations according to what Leibniz called the 'combinatorial art' would reveal the workings of the mind, which he concluded from his belief that 'all our thinking is nothing but the connection or substitution of signs, whether they be words, or marks, or images'.[143] The signs for the primitive concepts, being the building blocks of all knowledge, should represent them directly and unambiguously. Dimly echoing Becanus's search for basic monosyllabic elements, Leibniz therefore asked for *figures significantes par elles mêmes* that could be understood immediately: a script with 'signs as natural as possible' (*notas quam maxime naturales*) that could be read without a dictionary.[144]

In Leibniz's work we again discern the influence of Kircher, who was one of his correspondents. Both authors looked to China as the utopian state in which the structure of language directly reflected the structure of reality. Ideas about the Chinese writing system were therefore an important source of inspiration for Leibniz's logical theories.[145] He must have been drawn to his Jesuit predecessor's assumption that the Chinese classified their pictograms according to the four physical elements: 'When they discussed of a fiery nature, they used serpents, asps, and dragons, which, arranged in this or that pattern, stood for this or that thing. To describe airy subjects, arrangements of birds were needed; for watery topics, fish; for the description of vegetable nature, flowers, leaves, and branches' (fig. 19).[146] Such a view of pictograms as classification symbols explains why Leibniz expected Chinese script to reflect the way the Chinese organised knowledge. Deciphering the characters would be a great contribution to epistemology.[147]

Taking into account the scholarly background of Leibniz's logical theory involving Chinese and Egyptian writing, contrary to what is commonly thought he did not invent symbolic logic: Kircher's *Ars magna sciendi* (Amsterdam 1669) appeared earlier. In its attempts at designing symbolic logic this book makes conspicuous use of pictograms. The title page features an image of Kircher's *alphabeta artis*, listing various symbols that index argumentative combinations, such as a heart for 'concordance' and an omega for 'the end' (fig. 20). The list concludes with small images of a man, an animal, a tree, and a stone to denote categories that respond to the hierarchy of creation; an angel's head refers to the angelic aspects of



19
Willem van der Laegh, *Chinese characters*
Athanasius Kircher, *China illustrata*
(Amsterdam 1667)
(photo: Universiteitsbibliotheek
Amsterdam, Special Collections).



TABULA *Alphabetorum Artis noſtræ.*

Columna prima. *Alphabetum primum Erotematicum.*	Columna ſecunda. *Alphabetum principiorum abſolutorum.*	Columna tertia. *Alphabetum principiorum reſpectivorum.*	Columna quarta. *Alphabetum principiorum univerſalium.*
1. An.	1. B. Bonitas.	1. = Differentia.	1. △ Deus.
2. Quid.	2. M. Magnitudo.	2. ♡ Concordantia.	2. Angelus.
3. Cur.	3. D. Duratio.	3. ●○ Contrarietas.	3. ◎ Cœlum.
4. Quantum.	4. P. Potentia.	4. α Principium.	4. □ Elementa.
5. Quî.	5. S. Sapientia.	5. ⊙ Medium.	5. Homo.
6. Quale.	6. Vo. Voluntas.	6. ω Finis.	6. Animalia.
7. Ubi.	7. Vi. Virtus.	7. M Majoritas.	7. Plantæ.
8. Quando.	8. Ve. Veritas.	8. Æ Æqualitas.	8. Mineralia & omnia mixta.
9. Quibuſcum.	9. G. Gloria.	9. Mi. Minoritas.	9. ::: Materialia; Inſtrumentalia.

20
'Alphabeta artis'
Athanasius Kircher, *Ars magna sciendi* (Amsterdam 1669)
(photo: Universiteitsbibliotheek Amsterdam, Special Collections).

intelligence. Kircher developed an even more complete pictographic system in the manuscript *Novum hoc inventum quo omnia mundi idiomata ad unum reducuntur* (now in the Vatican Library). This includes other pictographic symbols for the verbs drinking (chalice), giving (hand), and seeing (eye), and for nouns such as hour (hourglass), city (skyline), law (scales), faith (cross), and the Holy See (chair) (fig. 21).[148]

Any utterance written in the alphabet of *ars magna sciendi* would lay bare the structure of its argument in an unambiguous way. This assumption illustrates the appeal of the supposedly pictographic Chinese characters to philosophers in Europe. Westerhoff calls attention to Leibniz's assumption of the 'structural isomorphism' between matter, thought, and language.[149] To Leibniz, just as reality is the combination of primitive forms, thought processes are the combination of primitive mental images, and they are to be expressed most unequivocally in combinations of universal characters. This idea harks back to one of Comenius's expectations about pictography; if Chinese characters aided cross-cultural communication, he wondered whether they would also lead to 'the discovery not only of a language but of thought, and what is more, of the truth of things themselves at the same time?'[150]

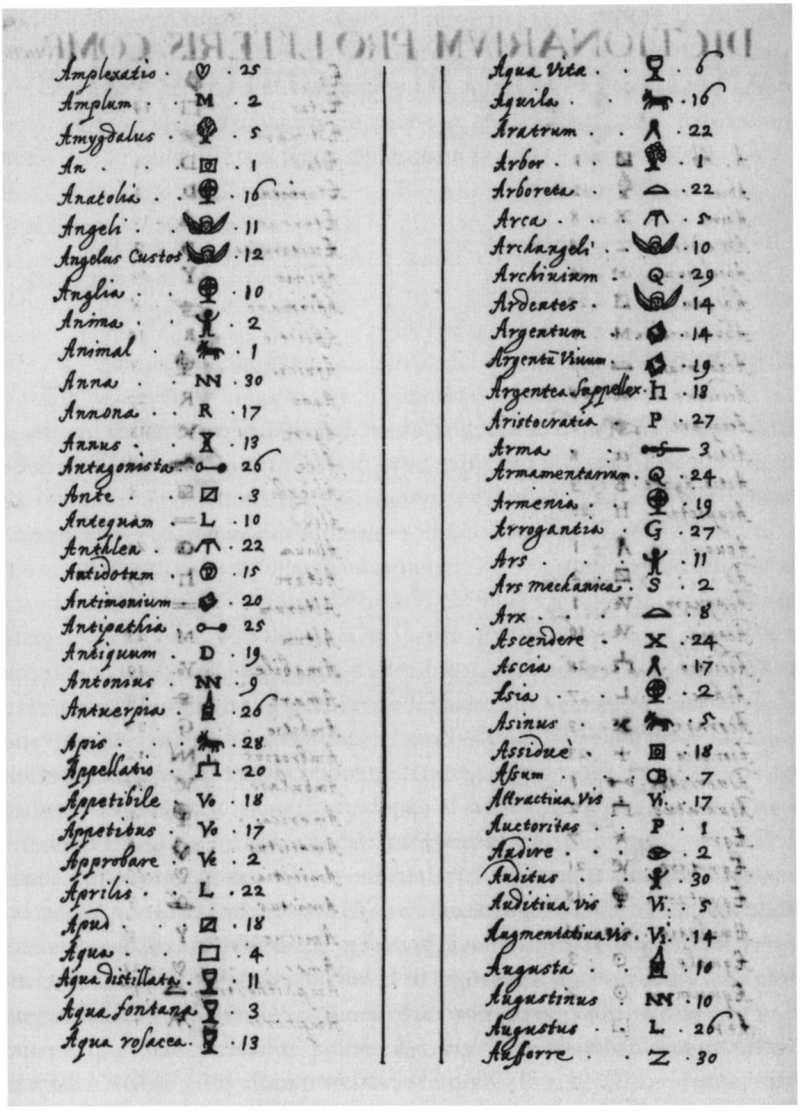
Thus, at the end of the seventeenth century, the different expectations about pictography merged into what Rossi calls the 'logico-encyclopaedic tendency'. Leibniz apparently derived from Comenius the thesis that 'the universal language and the encyclopaedia [i.e., a system for organising all knowledge] were coincidental'.[151] Leibniz's statement on his own *lingua characteristica* confirms this interrelationship: 'One who learns this [universal] language, simultaneously learns the encyclopaedia which is the true entrance to the sciences'.[152] Discussing logico-encyclopaedism further would take us too far afield from Netherlandish art. Yet, one aspect is relevant for our discussion, namely the link between memory, logic, language, and collecting.

We can only briefly point out that early modern culture assumed memory and collections to be similar, primarily because both were considered to be spatially extended.[153] As already noted, memory was taken to be an array of different *loci* where the objects to be remembered could be deposited. Quiccheberg's taxonomic text thus referred

21

'Pasigraphia'

Athanasius Kircher, *Novum hoc inventum quo omnia mundi idiomata ad unum reducuntur*, (Rome, Vatican Library).



repeatedly to Giulio Camillo's mnemotechnical treatise *Teatro della memoria* (1550), which he called a 'semicircular museum'.[154] The supposed link between the structure of nature and the structure of thought explained the philosophical importance of *naturalia* collections: they would reveal how the 'grammar of things' overlapped with the 'grammar of the mind'. One is reminded of Hooke's metaphor that the Royal Society's display reflected nature's grammar. Collections that adequately organised natural objects would disclose how God had written his Creation. Accordingly, the poet and playwright Jan Zoet (c. 1608-1674) described an Amsterdam scientific collection as 'A book in which God has described himself splendidly. / The mortal mind is dumbfounded in the face of such letters'.[155]

The two-pronged concern with philosophical language and taxonomy explains why Leibniz was interested not only in pictography but also in the display of *naturalia* and *artificialia*. In 1675, he devised an outline for a museum, or rather a centre for universal scholarship comparable to Kircher's, including a library, theatre, garden, and laboratory to accommodate conferences and performances. These would extend, to name just a few, to demonstrations of the camera obscura, shadow projections, calculators, Chinese arts, and the taxonomy of insects established by the Dutch physician Johannes Swammerdam (1637-1680).[156] In tandem with the 'logico-encyclopaedic tendency', the end of the seventeenth century witnessed the proliferation of new ways of organising collections obeying the laws of physics or natural philosophy in general. In Hamburg, Johann Daniel Major's *Unvorgreiffliches Bedencken von Kunst- und Naturalienkammer insgemein* (1671) replaced the common taxonomy based on cosmological principles, such as the four elements, with a more properly scientific one based on materials. This effort seems to run parallel to a development Jorink detected in the Netherlands: he singles out Swammerdam, who looked for scientific constants in nature such as the arrangement of animals according to genus and the stages in their development.[157] Swammerdam's ideas were widely influential. For instance, Levinus Vincent (1658-1727), author of *Wondertooneel der nature* (Theatre of nature's marvels, 1706), structured his collection according to similar categories (fig. 22).[158]

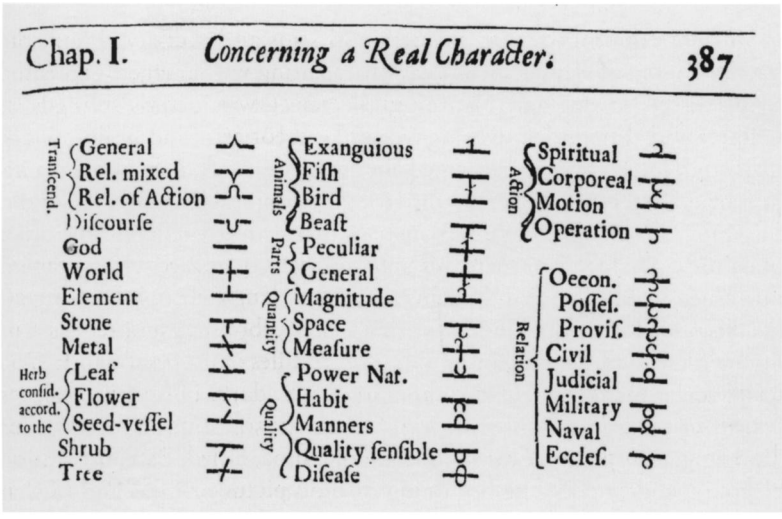
The most literal equation between the principles of universal language and the principles of collecting transpired in the Royal Society. Its motto *Nullius in verba* expressed its scepticism of scholarly Latin and alphabetic language in general. The Society's secretary, Henry Oldenburg (c. 1617-1677), condemned the earlier Scholastic framework as follows: 'Let us emancipate ourselves from that servitude, and let us be eager henceforth to scrutinise nature and things as they are'.[159] And so when it desired to arrange its collection 'according to the exact method of the ranks of all the species of nature', the Society turned to John Wilkins's project for a universal language discussed above.[160] We may quote from his main philosophical work, *Essay towards a Real Character and a philosophical language* (1668), to stress the importance of pictographic theories. He was inspired by 'the men of China, who have for many ages used such a general Character, by which the inhabitants of that large kingdom (...) communicate with one another, everyone (...) reading it in his own language'.[161] In his own alphabet of Real Characters, Wilkins used symbols that are not truly pictograms but what may be called ideograms, signs representing the categories of reality. Still, as Slaughter points out, his project was based on the idea that the highest form of knowledge is observational rather than mathematical, and that the faculties of sense provide the essential concepts for thought (fig. 23).[162] Wilkins assigned specific symbols to the elements, such as stone, metal, and vegetation, in a manner not dissimilar to how Kircher thought that Chinese pictograms expressed classifications in nature. Wilkins's writings thus testify most literally to the link between the pictographic project and scientific taxonomy. It

seems no coincidence that he built on Vossius and Hugo, two authors from the Low Countries, a region where writing with images was such a topical subject and where the logical aspect was complemented by hieroglyphic, linguistic, and encyclopaedic theories.

Conclusion

In *Gulliver's travels* (1726), Jonathan Swift parodied pictographic ambitions in his account of the school of languages at the Lagado Academy of Projectors. Here, words are simply abolished and replaced in conversation by the things they represent, bundles of which could then be assembled in advance as required for each day's business. Another fictitious travel account, *Le Nouveau Gulliver* (1730), returned to this idea describing a utopian island off the coast of China, called 'Babilary', which is ruled by women and uses a script based on pictures.[163] It seems that in the early eighteenth century, pictography was banned to the realm of imaginary voyages, thus validating Descartes's scepticism: 'Don't expect ever to see it in use, for that would presuppose huge changes in the order of things, and the whole world would have to be nothing other than a terrestrial paradise, which is fine only in the land of novels.'[164]

22
A. van Buijsen
engraving, 215 x 305 mm, title page of Levinus Vincent, *Het tweede deel of vervolg van het wondertooneel der natuur* (Amsterdam 1715)
(photo: Universiteitsbibliotheek, Leiden).



23
Ideograms
John Wilkins, *Essay towards a Real Character and a philosophical language* (London 1668).

This overview, focused on the Netherlands, has revealed that the possibility of pictography chiefly remained a promise, a conclusion that, from the perspective of a century after the 'linguistic turn' in the humanities, does not surprise us.[165] The urgency of the pictographic project for seventeenth-century Dutchmen can be understood only by looking at the political context – religious wars in Europe and the clash between revealed wisdom and new discoveries. The popularity of images of Babel from the second half of the sixteenth century onwards suggests that the attempt to write with pictures was just one chapter in a grander debate, questioning the status of Hebrew as *lingua sancta*. Fuelled by the rise of the vernaculars and the decline of Latin, it went hand in hand with a growing layman's interest in natural philosophy and the inventorying and categorising of the visible world.[166] Not only did Jesuits such as Van Sambeeck, Hugo, and Kircher think about pictograms as a means for the militant Church to compensate, by global proselytisation, for the souls lost to the Reformation, but Comenius too had a clear utopian program. Having arrived in Holland after travelling through war-torn Europe, he proposed a world council to institute a universal language whose fixed definitions would eliminate the ambiguous use of words.[167] In a millenarian context, pictography promised to undo the curse of Babel and regain Adamic dominion over nature. Such expectations explain how scholarly discussions about issues such as Chinese writing could spark theological controversy. According to the Frankfurt professor of logic Elias Grebnitz (1627-1689), every time the name of God was written in Chinese, a sin was committed against the Second Commandment which prohibits the depiction of the divinity.[168] When another Protestant, the Leiden-educated orientalist Andreas Müller (c. 1630-1694), finally found his key to Chinese, which was simultaneously a key to the hieroglyphs, he was accused of heresy and, in the hour of his death, threw his materials into the fire.[169] Isaac Vossius's Chinese utopia was also perceived as dangerous to accepted authority. One critic even deemed it 'spoiled by a false metaphysics' that would lead to 'nothing less than a total subversion of all religion'.[170]

It soon transpired that this criticism was unnecessary. From the scientific point of view, as far as Real Characters were concerned, according to the elder Vossius and Heurnius, the tens of thousands of signs of Chinese and Amerindian writing discouraged linguists and philosophers. Dalgarno, for instance, complained about the 'near infinitely burdensome' number of letters making them unfit for philosophical language.[171] Nor did the ambitions for a pictographic language that perfectly reflected the order of nature come true. But there was one, largely unintended, scientific spin-off. When Leibniz studied the signs used in the *Yi Jing* (Book of changes), his misguided ideas on Chinese writing inspired him to interpret them as Fohi's 'hieroglyphs' representing the Infinite and Chaos from which God had rescued mankind. He also thought, however, that he had revealed a system of binary relations, which became a source of inspiration for his ideal language: 'a new *characteristica* that will appear to be a continuation of Fohi's, and provide the beginning of the analysis of ideas and of that marvellous calculus of reason that I am planning'.[172] This *characteristica univeralis* catalysed the development of modern symbolic logic and eventually of computer languages, thus fulfilling the seventeenth-century wish for a language whose structure would be identical to the structure of thought itself.[173]

From the artistic point of view, one can hardly say that Samuel van Hoogstraten's reference to Egyptian, Chinese, and Meso-American pictography was inspired by an insight more profound than his ambition to raise the intellectual status of painting. Yet, as an echo of the many-sided debate sketched above, it also suggests that on a conceptual level art and scholarship were deemed to be closely interwoven – perhaps more so than historians often realise. In the Dutch Golden Age, discussions about the figurative arts were embedded in wide-ranging assumptions about the visual foundation of mental processes. On the one hand, the faculty to process sense input and make argumentative combinations was understood as the spatial arrangement of images stored in memory. On the other hand, ideas about pictographic signs highlighted the role of primitive concepts in language and in thought, as the basis for creativity and complex knowledge. In contrast to modern notions, pictographic ambitions also underscored the idea that the structure of language could directly reflect the structure of the physical world.

Finally, we have seen that in the Netherlands, the discussion on pictography occupied scholarly disciplines involving the most remote places in history and geography, as well as the farthest recesses of the human mind. This extended to the animals in Noah's ark, Hermetic hieroglyphs, runes, emblems, Amerindian writing, rebuses, and early attempts at philosophical language and computing. The quest for the grammar in which God speaks through his Creation involved *naturalia* and *artificialia* in a comprehensive manner. It is safe to say that the pictographic project could flower only in the scholarly hothouses provided by encyclopaedic collections, equipped to cultivate a crossbreed of words and things. It was doomed to wither.

Notes

*I am grateful to Jennifer Kilian and Katy Kist for correcting my English. Of course, any and all mistakes are mine alone.

1 Van Sambeeck 1663, 248.

2 'd'Egyptenaeren, Chinezen (...) hebben hare boeken met Zinnebeelden, in plaets van letteren, geschreven; en deeze wijze van uitbeelden is met de schilderkonst ook tot ons gekomen', Van Hoogstraten 1678, 90.

3 '[G]eschilderde verbeeldsels, welke by de woeste barbaren van Mexiko en Peru in gebruik waren', Huygens 1754, 79.

4 The Dutch term *beeldletter* was used in Goeree 1697 (ed. princ. 1670), 25, and Kircher 1668, 274.

5 Aristotle, *De anima* III, 3 (Bekker 431a).

6 Plato quoted by Coudert 1978, 65.

7 Rossi 2000, 173.

8 Van Hoogstraten 1678, 25.

9 Descartes to Mersenne (1639), quoted from Rossi 2000, 114.

10 Lambert Lombard (1506-1566) based hieroglyphs on Italian examples. See Cat. Liège 2006, 87-91, 409-410. He included some in *The refusal of Joachim's sacrifice,* oil on panel, 112 x 80 cm, Liège, Musée de l'Art Wallon. Zacharias Heyns (c.1566-before 1638) drew an obelisk with hieroglyphic symbols that constitute an easy rebus (*Album amicorum* for Abraham Ortelius, f. 104, Cambridge University, Pembroke College Library); see Van Dorsten & Hamilton 1980. Joris Hoefnagel (1542-1601), who defined himself as 'exornator hieroglyphicus', combined images of natural history with emblems and image alphabets; cf. Wilberg Vignau-Schuurman 1969.

11 These examples are discussed in Waterschoot 1978, 59. See also Iversen 1961, 159.

12 *Funerary monument of Canon Hubert Mielemans,* c. 1558, pierre de Theux, 285 x 130 cm, Liège, Église Sainte-Croix. On Van Heemskerck see Veldman 1977, 144-145. Joachim Beuckelaer painted hieroglyphs in his *Market scene with Ecce Homo,* 1570, Stockholm, Nationalmuseum.

13 Iversen 1961, 65; Alberti, *De re aedificatoria* X, VIII, 4.

14 Iversen 1961, 65; and more recently Curran 2007.

15 Van Heemskerck drew an authentic obelisk, then on the Capitoline Hill in Rome in 1532-1536; the drawing is now in the Staatliche Museen, Berlin.

16 The *editio princeps* in Greek was printed by Aldus in Venice (1505). Also Kircher (on whom more below) used the interpretations attributed to Horapollo. On the book's Renaissance reception see Iversen 1961, 47-49, 65, 72-75.

17 On Alciati and Pignoria, see Manning 2002, 116. In Antwerp, Christopher Plantin printed new editions of Alciati's book.

18 Iversen 1961, 75.

19 The second image refers to the idea that things need time to mature. The literature on emblems is vast; see the overview in Manning 2002, 13-36.

20 Vossius calls Pignoria 'amicissimus' in G. Vossius 1635, 140. On the two scholars' correspondence, see Van der Lem & Rademaker 1993, 468, Rademaker 1981, 218-219 and notes.

21 The book was issued by the Bavarian scholar Johannes Georgius Herwarth von Hohenburg (1553-1626); see Iversen 1961, 86. North of the Alps, the first description of the hieroglyphs in the vernacular was Herold 1554.

22 Jorink 2006, 276; Jorink 2010, 270-271; Jorink 2011.

23 All of the artists working for the Arundels either came from the Low Countries or were trained there, just like their librarian, the linguist Franciscus Junius. The artistic and scholarly world of the Arundel circle is discussed in my *Art and antiquity in the seventeenth-century Netherlands,* Amsterdam & Philadelphia, forthcoming (esp. chapter 1).

24 Arundel's agents were John Greaves and William Petty. See Howarth 1985, 138. Arundel also visited Kircher's collection in Rome; Reilly 1974, 160.

25 Van Waesberghe offered 2 200 scudi for the publishing rights in the Holy Roman Empire, England, and the Low Countries; Stolzenberg 2001, 10.

26 Others were Coenraet Decker (1651-1685), Willem van der Laegh (1614-1674), Theodoor Matham (1606-1676), Jean van Munnichuysen (1654/55-after 1701), Crispijn van de Passe the Younger (1597/8-1670 or after), and Athonie Heeres Sioertsma (born 1626/27).

27 Kircher's illustrators are discussed in Godwin 2009, 47-58; for his iconography, see Tongiorgi Tomasi 1986, 165-175. The honour of drawing Kircher's portrait in Rome on 2 May 1655 fell to Bloemaert; it became the basis for the scholar's later effigies in print and painting.

28 Among the artists, the amateur draughtsman Goeree (Goeree 1697, 26) refers to Kircher's take on the hieroglyphs formulated in Kircher 1652-1654; Goeree 1682, 43, refers to Kircher's *d'Onderaardse weereld* of 1682. Drawing on the *Oedipus*, the Leiden-based artist and humanist Johannes Schefferus (1621-1679) concluded that the Egyptian pictograms derived from classical ekphraseis, such as Apelles' *Calumny*; see Ellenius 1960, 131.

29 Kircher's works in Dutch were Kircher 1662 (other editions 1681, 1697, 1709), Kircher 1668, and Kircher 1682. The international impact of the book on China is discussed in Shen-Ching Chang 2003.

30 Huygens referred to Kircher's *Herssenschilderagtige reis* (*Iter extaticum*); cf. Huygens 1754, 123. Spinoza was interested in the *Onderaardse weereld,* as his correspondence with Henry Oldenburg testifies (cited in a letter of 7 October 1665), reprinted in Wolf 1935, 202.

31 Stolzenberg 2001, 10.

32 Yates 1964, 417. This idea drew on various sources, including Plato's reference in Philebus to the Egyptian deity Thot as the inventor of writing; later authors such as Philo and Cicero identified Thot with Hermes; Iversen 1961.

33 Alberti 1966, 63-65.

34 Junius 1991, vol. 2, 202, no. 613. Other references to Hermes Trismegistus as the inventor of painting are in Biondo 1549, fol. 8v; R. Alberti, *Trattato della nobiltà della pittura* (Rome 1585), quoted from Barocchi 1960, vol 3, 230; Paleotti 1960, 191.

35 'Trismegisto antiguo escriptor, quiere que la Pintura naciese con la Religion (...) Los Egipcios es cierto que se davan a entender por modo elegante, con figuras de hombres, y animales, como lo dize Cornelio Tacito: "Primi AEgyptii per figuras animalium sensus mentem effingebant"', Carducho 1979, 109-110.

36 The inventory is published in Barge 1934. On Heurnius's collection, see also Jorink 2011, and Huisman 2009, 46-76.

37 Cornelius 1965, 7.

38 Kircher 1652-1654, vol. 3, 514-517; see Jorink 2006, 303.

39 Jorink 2006, 300; Jorink 2010, 291-292; cf. Logan 1979.

40 According to Tim Huisman, 'the degree of idiosyncrasy in Heurnius' intellectual activities and convictions appears limited', Huisman 2009, 68.

41 Hermes Trismegistus s.a., Hermes Trismegistus 1607, and Hermes Trismegistus 1643.

42 In the 17th century, the Amsterdam-based Franciscus Mercurius van Helmont (1614-1698) developed an alternative view, which again took Hebrew as its source; see Coudert 1999. On Becanus's monosyllabic primeval language, see Van Hal 2008, 83-136; Eco 1995, 95-103. On Adamic language, see Aarssleff 1999 and Krop 1996.

43 Becanus, 'Origines Antwerpianae', Liber IX, in: *Opera* (Antwerp 1580); discussed in Iversen 1961, 88, 159.

44 'Viden' quam vocale symbolum cum statua quadret, quamque apte eandem utrumque signum exprimat notionem?', Becanus, 'Hieroglyphica', in: *Opera* (Antwerp 1580), quoted from Purnell 2002, 115.

45 Schnapp 2006, 399-412; Jorink 2011. La Peyrère's book was translated into Dutch as *Preadamiten,* s.l. 1661.

46 La Peyrère 1655, 318, 420.

47 Grotius 1642.

48 De Laet 1643.

49 For the Hornius-Vossius debate on Chinese history, see Weststeijn 2007.

50 Kircher 1652-1654, chapter 4, 33; Hornius 1652, 229, 236. Few historians have addressed 17th-century European knowledge of Amerindian writing; see Perri 1995. Alciati had some interest in the Amerindian pantheon; see McCormack 1995, 122.

51 'Existimo autem Sinensium scribendi morem apud Mexicanos et Iaponenses paulatim exolevisse propter summam difficultatem. Habent enim notarum CXX millia, ex quibus mediocriter doctum ad LXXX millia nosse opportet. Quid mirum notis illis abolitis alias et faciliores figuras surrogatas? Mexicani quae picturis exprimi poterant, nolebant longo et difficili labore siglis notare', Hornius 1652, 271.

52 'Fateor non unam scribendi penitus apud Mexicanos et Sinenses rationem, nec tamen penitus diversa fuit (...) Cataini scribunt penicillo pictorio et una figura multas literas complectitur ac verbum facit', Hornius 1652, 270-271.

53 Vossius refers to La Peyrère's thesis in I. Vossius 1659a, 47.

54 The term is Karel Davids's. Although sceptical towards Kircher's work on the hieroglyphs, Vossius expressed regard for the Jesuit's 'ingenuity and erudition', I. Vossius 1659b, 41.

55 On the museum, see Mastroianni, 2001. For Vossius's contacts with Kircher in Rome, see his remarks on 'Kircherus (...) mihi olim Romae amicus', I. Vossius 1659b, 41. On his visit to Rome in 1645, Coenraad Burgh gave Vossius's regards to Kircher; see Blok 2000, 154.

56 I. Vossius 1685.

57 See Weststeijn forthcoming.

58 'Soli in hoc nostro mundo sunt Seres, qui iam a quinque fere annorum millibus perennem & nunquam interruptam conservavere literaturam, illam quidem operosam, sed cujus fructus tanto respondeat labori, cum si quis vel solos ipsorum perdidicerit characteres, plus possit videri profecisse, quam si quis omnium quot sunt quosve [*sic, presumably for* quotve] fuere linguarum assecutus fuerit peritiam', I. Vossius 1685, 69-70.

59 'd'[E]erste Sinezen hun merkletteren uit alle de dingen, die zich voor't gezicht vertonen, genomen, en alleenlijk naar de verscheide schikking en ordening dezer samengezette dingen de bevattingen van hun geest geopenbaart en bekent gemaakt hebben', Kircher 1668, 275.

60 Kircher 1668, 275, 281. On Van der Laegh, see Godwin 2009, 56, 238.

61 On ape symbolism see Janson 1952.

62 'd'[E]erste beginselen der letteren, die zy van Vader Cham, en van Merkurius Trismegistus, raat van zijn zoon Nefraim, en d'eerste insteller van de beeltletteren (...) geleert hadden. En zeker, deze oude merkletteren der Sinezen, in alles met de beeltletters gelijk, zijn een gewichtig bewijs, daar door ik bewogen word om dit te geloven', Kircher 1668, 274; cf. Szczesniak 1952.

63 Peters 2008, 34-35.

64 Peters 2008, 159. English scholars rose to the occasion in 1687, when the Oxford librarian Thomas Hyde asked Shen Fuzong to catalogue his Chinese books. Some of Shen's Latin letters survive, partially published in Hyde 1796.

65 It can be assumed they had some knowledge of Chinese characters. The family had left Japan in 1641 and the sons had been born in 1620 and 1634. The younger François was listed in the matriculation register as *japonensis*; see Kornicki 1993, 505.

66 The Septuagint states that the world was created in the year 5200 BCE, the Vulgate in the year 4004 BCE. The Deluge was calculated to have taken place in the years 2957 and 2349 respectively; see Finnegan 1964, 191, 184, and Weststeijn 2007, 544.

67 Webb 1669, references to Vossius on 154-157, 175-176, 188. See Harbsmeier 1995. On the 'primitive' status allotted to Chinese, see Marrone 2004, 85-92.

68 Bold 1981. References to Vossius in Webb 1669, 154-157, 175-176, 188.

69 Webb 1669, 169, 187.

70 Ibid., 177.

71 *Haegse Mercurius* no. 97 (9 July 1698), [3] and no. 103 (30 July 1698), [1-2]; quoted from Van Kley 2003, 230.

72 Gombrich 1948.

73 '[N]on senza cagione fu dalli Greci la pittura detta ζωγραφία, cioè viva scrittura (...) Come narra Alfonse de Castro a proposito che la pittura sia viva scrittura a ciascheduno in universale, ancorché idiota, navigando li Spagnoli sotto Carlo Quinto nelle nuove parti occidentali del mondo, ritrovarono che gli uomini di quel paese in luogo di lettere e caratteri talmente dipingevano varie imagini', R. Alberti, 'Trattato della nobiltà della pittura (1585)', quoted from Barocchi 1971-1977, vol. 1, 367.

74 'Ubi *scribere* dixit [Statius Papinius] pro *pingere,* more Graeco, quibus utrumque notat; unde pingendi ars iis graphice vocatur. Ac sic quoque non solum scripta, sed etiam picta, legi dicimus', G. Vossius 1650, 84. The indefinite boundary between words and images in early modern scientific explanation is addressed in Lüthy & Smets 2009.

75 'Teycken-const omhelsend' alle dinghen, / Houdt alle Consten in matighe stringhen. / Sy is een Voedster aller Consten goedich (...) Iae oock d'edel Grammatica bevroedich, / Is door haer ghehoogh en ghewassen spoedich, / Leerend' haer letters en caracten halen, / Waer door de Menschen in verscheyden talen / Malcanders meeninghe verstaen accoordich', Van Mander 1604, fol. 8V, vol. 2, par. 2. Goeree likewise argued that painting was just as fundamental as theology for human civilisation, since literacy was based on 'hieroglyphic image-letters', Goeree 1697, 25.

76 *The advancement of learning,* II.xvi.2.

77 Hugo 1617. See Strasser 1988, 90-95.

78 Hugo 1617, 59-62, 88.

79 'Si singulae literae impositae essent, non vocibus, sed rebus ipsis significandis, eaeque essent hominibus omnibus communes; omnes omninio homines, etiamsi gentes singulae res singulas

diversis nominibus appelent, singularum gentium scriptionem intelligerent', Hugo 1617, 60.

80 There were 40 editions and many translations (a Dutch one by Justus de Harduyn).

81 Steegius 1647. This *beelden-sprake* consists in three dimensions: narrative or figural representations, metaphors or parables, and symbols. Muller 2006 discusses it in relation to the Chinese mission, Dutch almanacs, and the Lima-based missionary Diego Martinez, who burned his writings and entered the jungle, in order to teach through images painted on panels.

82 G. Vossius 1635, vol. 1, 140: 'quomodo item gentes plurimae conveniunt in notis Arithmeticis, quas cifras vocant: quomodo etiam variarum linguarum Astrologi conspirant in notis planetarum', G. Vossius 1635, vol. 1, 142.

83 '[P]rodidit Nicolaus Trigaultius (...) non pauciores Sinensibus literas esse, quam voces numerantur: eas tamen iter inter se componere, ut LXX, aut LXXX milia non excedant. Imo idem refert, Sinenses & Japanenses, etsi lingua aeque differant, ac Hebraei, & Belgae; tamen, quae sic scribuntur, intelligere (...) Utcumque enim in legendo alii alia verba pronunciassent: tamen iidem fuissent conceptus. Nempe uti nunc variarum linguarum homines rem eandem conspicientes eandem rem concipiunt: ita idem [*sic*] rei signum intuentes, eundem haberent conceptum', G. Vossius 1635, vol. 1, 143. Vossius discusses Chinese writing on pages 140-143 and 122.

84 'Quomodo ex pictura hominis, equi, arboris, domus, homines omnes eundem habent conceptum', G. Vossius 1635, vol. 1, 142.

85 '[T]ot prope characteribus fore, quot res sunt', G. Vossius 1635, vol. 1, 142. The remark is all the more striking as Vossius's estimate of the total number of characters was too high: the most complete Chinese dictionary of the 17th century, Mei Yingzuo's *Zihui* of 1615, listed 33,179 characters.

86 On early modern mnemotechnics, see Yates 1974, also below, note 124 ff.

87 Cornelius 1965, 29.

88 G. Dalgarno, 'Omnibus quo omnino hominibus (1660)', in: Cram & Maat 2001, 121.

89 G. Dalgarno, 'Ars signorum, vulgo character universalis et lingua philosophica (1661)', in: Cram & Maat 2001, 157.

90 Cornelius 1965, 32.

91 Walton 1657, 'prologomena', 10.

92 Comenius 1658; on the ideal of eduction through images, see Sadler 2007. See also Forster 1961.

93 Rademaker 1981, 280.

94 '[O]f all of Comenius' ideals of universal language, the *Orbis pictus* came closest', Slaughter 1982, 101.

95 Comenius 1938, 186-189.

96 'Vor allen Dingen, must du lernen die schlechten Stimmen, in welchn die menschliche Rede bestehet: welche die Thiere wissen zu bilden, und deine Zunge weiss nachzumachen, und deine Hand tan [*sic*] mahlen. Darnach wollen wir gehen in die Welt, und wollen beschauen alle Ding. Hier hast du een lebendiges und stimmbares Alfabeth', Comenius 1679, 4.

97 Geissler 1959, 151, 141.

98 Comenius 1662.

99 Manning 2002, 110-132, esp. 121.

100 Ibid., 115.

101 See Kircher 1675, 60-61, 66-68, 116-117, 122-123; for the individual animals, 54, 71-94.

102 Slaughter 1982.

103 S. Quiccheberg, *Inscriptiones vel tituli theatri amplissimi* (1565): its program is reprinted in Hüllen 1989, 121-130.

104 The collector was Ulisse Aldrovandi (1522-1605) whose *Opera omnia* were published in 1599-1668; see Jorink 2006, 274; Jorink 2010, 264-265, and Bono 1995, 123-124.

105 Jorink 2006, 308; Jorink 2010, 297.

106 Jorink 2006, 287, 310; Jorink 2010, 277, 299. Wormius echoed his fellow Scandinavians Olaus Magnus (1490-1557) and Johannes Bureus (1568-1652). The latter's mystical view on pictograms fused Hermetic and cabbalistic lines of thought. See Magnus 1655, lib. I, cap. XXXVI, 58; Ellenius 1960, 273, points out that similar ideas were conceived by the French Jesuit Nicolaus Caussinus (in *De symbolica Aegyptiorum sapientia,* 1618).

107 Jorink 2006, 305.

108 Jorink 2006, 295; Jorink 2010, 295.

109 One example is the Gotha Collection; its catalogue is reprinted as an appendix in Collet 2007.

110 Cornelius 1965, 33.

111 The first statement is from Johann Valentin Andreae's *Theatrum physicum* (1619); quoted in Collet 2007, 44. Adam Olearius's catalogue is quoted by Hüllen 1989, 131.

112 Hooke 1705, 338.

113 Van Hoogstraten 1682.

114 '[M]undus corporeus est Theatrum Dei visibile', Comenius 1966, col. 431.

115 Jorink 2006, 298.

116 This is the central thesis of Jorink 2006; Jorink 2010.

117 Bakker 2004; see also De Klijn 1982.

118 *The compleat gentleman* (London 1622) quoted in Ellenius 1960, 228-229. Peacham travelled to the Netherlands in 1613; as exemplary artists he mentioned Hendrik Goltzius, Johannes Stradanus, Jan Wierix, Chrispijn van de Passe, and Michiel van Mierevelt; Peacham 1622, 108-109.

119 '[N]e' primi tempi volse Iddio ammaestrare gli uomini per l'istesse opere sue e cose create, che potessero essere universalmente apprese da tutti, allegando il detto del salmo: "Caelo enarrant gloriam Dei et opera manuum eius annunciat firmamentum." (Psalm 18,2) (...) Non ci è gente o lingua o condizione di persone, che non possa intendere bene quelle voci tacite ch' escono dall' opere create d' Iddio', Paleotti 1960, 144, 148.

120 Cited in Holtgen 1988, 183-207.

121 '[A]lle sienlijcke creaturen zijn als letteren in eenen schoonen Boeck om ons den werckman derselve aen te wijsen', Corstens 1598, fol. 50r; cf. Jorink 2006, 63 and 353; Jorink 2010, 52.

122 '[D]it boeck der nature, daer soo een fraeye samenvoeging van schepselen in gevonden wordt, als soo veele letteren die een verwonderlijcke sin maken', Spanheim 1677, 56, quoted from Jorink 2006, 426; see also Jorink 2010, 404-405.

123 '[D]e gene, de welcke meynen soude, dat de letteren in een druckerye sonder keur genomen zijnde, of dat een hoop Characteren (...) in de locht opgesmeten zijnde, en daer verwerdelijck dooreen beroert, sich soo gelijckigh te samen souden konnen voegen, en met soo veel ordre by een vergaderen, dat men van die letters, en Charachters [*sic*] een boeck vol van leeringen of een welgemaeckt gedicht soude sien voortkomen', Spanheim 1677, 110, quoted from Jorink 2006, 426; see also Jorink 2010, 404.

124 Cicero, *De oratore,* II, 86; see Yates 1974.

125 Bruno, *De umbris idearum* (1582), paragraph 101; quoted by Ingrid Rowland, who paraphrases Bruno's idea that 'the art of memory isolated individual sense perceptions from the

stream of consciousness and endowed these perceptions with special characteristics that transformed them into thoughts', Rowland 2009, 123.

126 'Fabulas et apologos hoc discet [puer] libentius ac memineret melius, si horum argumenta scite depicta pueri oculis subjiciantur, et quidquid oratione narrantur, in tabula demonstretur. Idem aeque valebit ad ediscenda arborum, herbarum et animantium nomina, simul et naturas (...) Plerique gaudent pictis venationibus, hic quot species arborum, herbarum, avium, quadrupedum, per lusum disci possunt?' Erasmus 1966, 447, 571-573.

127 For additional examples, he pointed to the imagery in fables and card games. G. Vossius 1699, fols. 771-80v.

128 Comenius, *Philosophia prodromus et conatuum pansophicorum dilucidatio* (Leiden 1644), quoted from Rossi 2000, 134.

129 Gerhardt 1875-1890, vol. 4, 73; Rossi 2000, 178-9; cf. Kneale 1966.

130 Rossi 2000, 190.

131 Strasser 2000, 22.

132 Ibid., 32-33.

133 Descartes 1964-1972, vol. 10, 230; quoted from Rossi 2000, 112.

134 On this topic see Margolin 1986, vol. 2, 53-91.

135 Strasser 2000, 71.

136 On Buno, see Strasser 2000.

137 Compare the images of many-headed, many-limbed monsters from the Arminian-Gomarist debate, *Den teghenwoordighen arminiaen* (1623), *Warminiaen* (1618), and *Den nieuwen Barnevelschen handel* (1619), images in Cat. Utrecht 1994, 55, 71. Of course, these were not mnemotechnical images; however, we should realise that what strikes us as abstruse and far-fetched in the images was expected to make a more unequivocal and lasting impression than the accompanying text.

138 Strasser 2000, 54-55; see Clouston 1894.

139 See Baxandall 2003.

140 Wenchao Li 2008.

141 Gerhardt 1875-1890, vol. 7, 198-99; Rossi 2000, 185.

142 Heinekamp 1972.

143 'Omnis Ratiocinatio nostra nihil aliud est quam characterum connexio et substitutio, sive ille characteres sint verba, sive notae, sive denique imagines', Leibniz quoted from Gerhardt 1875-1890, vol. 3, 605, cf. vol. 7, 31.

144 Leibniz followed Becanus's view that German would come closest to the Adamic language, but dismissed his fanciful etymologies as mere 'Goropiser'. Leibniz, quoted from Gerhardt 1875-1890, vol. 5, 379; Leibniz, *Dissertatio de arte combinatoria* (ed. princ. 1666), quoted from Gerhardt 1875-1890, vol. 4, 27-104, esp. 73.

145 Perkins 2004, 42. The misguided view that Chinese letters represented basic concepts may have been inspired by one of the striking contingencies determining the Jesuits' success among the Chinese literati. Some missionaries were able to memorise Chinese poetry and recite it backwards, associating the characters with images in their artificial 'memory palace'; see Spence 1984. The presumed interrelations between Chinese 'pictograms', the layout of these images in the memory theatre, and the logical principles determining this layout seem a promising topic for further research.

146 Kircher 1667, 227. Kircher also lists other natural elements identified by the Chinese as the basis for characters.

147 On Leibniz's ideal of an *ars combinatoria* reflecting the structure of reality, see Westerhoff 1999.

148 Marrone 1986. For the manuscript in the Vatican library, see Marrone 2002, 125. The *Novum hoc inventum* is not a philosophical language but more comparable to sign language ('Pasigraphia') making communication possible between people speaking different languages.

149 Westerhoff 1999, 456.

150 Comenius 1938, 186-189. For his influence on Wilkins, see DeMott 1955.

151 Rossi 2000, 184.

152 Rossi 2000, 181; Gerhardt 1875-1890, vol. 7, 26.

153 See Bolzoni 1994. Some authors extend the comparison from the memory to the imagination. Cf. De la Puente 1619, 194: 'my imaginative facultie is, like a hall painted with many images and figures'.

154 See Westerhoff 2001, 645.

155 'Een boek, daar in zig God zelfs heerlik heeft beschreven. / Het vleeschelik vernuft staat, voor die lett'ren stom', Zoet 1675, 213. The statement refers to Jan Volckertsz.'s collection; see Jorink 2006, 323; Jorink 2010, 310.

156 Leibniz 1994.

157 Jorink 2006, 330.

158 Ibid., 344.

159 Letter to Jerónimo Lobo (13 April 1668), in Hall & Hall 1965-1986, vol. 4, 316-317.

160 The words are Robert Hooke's, reprinted in Hooke 1705 and quoted by Slaughter 1982, 159. Although the catalogue of the collection was compiled only after Wilkins's death, it was finished by one of his protégés, Nehemia Grew (1641-1712); see Collet 2007, 274, 280. Cf. Lewis 2007, 200; Pearce & Arnold 2000.

161 Wilkins 1668, 13, 451. At the Society, Robert Hooke tried to talk to some visiting Chinese merchants in 1693.

162 Slaughter 1982, 193.

163 Guyot Desfontaines 1730.

164 Descartes 1970, 9-12.

165 In the 18th century, Giambattista Vico continued to see pictography, or 'a language with natural significations' that was putatively developed in a primeval age of mankind, as the basis of all human culture. See Vico 1984, 138-146. In this context, he harked back to Becanus (p. 139), De Laet (p. 143) and Heurnius (pp. 29, 48, 51, 287).

166 Borst 1957-1963, vol. 3, 1048-1261; Wegener 1995.

167 Sadler 2007, Geissler 1959.

168 Lach 1940, 573.

169 Peters 2008, 205; Lach 1940, 573.

170 '[G]astés par une fausse métaphysique (...). qui ne vont pas à moins qu'à un renversement général de toute Religion', Renaudot 1718, 28-29.

171 G. Dalgarno, 'Character universalis (1657)', in: Cram & Maat 2001, 85.

172 Leibniz to Bouvet, quoted in Walker 1994, 447. See also Perkins 2004, 42, Sun Xiaoli 1995, and Porter 2001, 55-57.

173 Cf. Davis 2000. For a modern analysis of the feasibility of expressing logical relations in pictures, see Westerhoff 2005.

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